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Original Communications.

HYGIENIC THERAPEUTICS.

HYDROTHERAPY IN THE TREATMENT OF CHRONIC DISEASES.*

By Professor Dujardin-Beaumetz, Paris, France.

Gentlemen:—In the last lecture we studied the physiological effects of cold water and its different modes of application; we will now consider the benefits to be derived therefrom in the treatment of diseases.

The therapeutic effects of cold water are dependent on its physiological action; this action we may refer to the five following heads:

1. Effects on the circulation. Greater activity imparted to the circulation. Improved oxygenation of the blood. Stimulation of the hæmatopoëtic organs. This explains the beneficial effects of hydrotherapy in anæmia and chlorosis.

2. Effects on the nervous system. Enhanced functional activity of the cells of the spinal cord, greater regularity imparted to the functions of the great sympathetic, of the cord, and of the brain. This constitutes hydrotherapy one of the most powerful agents in the treatment of nervous diseases, and in particular of neuroses.

3. Action on nutrition. By the increased

* A lecture delivered in Cochin Hospital, and printed from advance sheets.

energy which it gives to the phenomena of cell-life, hydrotherapy occupies an important place in tonic and reconstituent medication. Hence it is applied with advantage to the treatment of consumptive and diathetic affections.

4. The revulsive effects which are caused by the application of cold water are utilized in visceral congestions (hepatic, splenic, uterine congestions, etc.). Here you will see hydrotherapy render you valuable service.

5. When the action of cold water is prolonged, it depresses the temperature. It is then an antithermic remedy, and as such occupies an important place in the treatment of acute febrile maladies.

As I intend to devote a special lecture to the antithermic properties of cold water, I shall in this lecture occupy myself only with the applications of hydrotherapy to apyretic and chronic diseases, following the order which I have above indicated.

But before going further, it is befitting that I should state as rapidly as possible some general considerations respecting the indications and contraindications for hydrotherapy. These pertain to the state of the subject, the season of the year, and the establishments or places where the hydrotherapic treatment is carried out.

We will begin with the indications and contraindications based on the state of the patient, and here we shall have to examine the age, the sex of the subject, the manner in which he supports the cold water, the chronic diseases from which he is suffering, or the intercurrent diseases which may appear during the course of the treatment. Hydrotherapy is applicable to all ages, and from the very moment of birth some physicians order cold-water lotions for the infant. Nevertheless, in advanced life, and especially in very old age, great precautions are necessary in the application of cold water, precautions called for by reason of the chronic diseases which ordinarily affect old age, and which constitute formal contraindications to the employment of hydrotherapy.

The question of sex raises two interesting points pertaining to indications and contraindications, the one concerning the female patient, the other the physician. With reference to the patient, will it do to give the douche during the menstrual period and during pregnancy?

Priessnitz gave an affirmative answer to the first of these questions, and deemed that the menses should never interrupt the hydrotherapic treatment. This has since been the customary practice in Germany and in England. In France the greater number of hydropathists refuse to apply cold water during the menses, and this despite the practice of Fleury, who has followed the principles of Priessnitz, and recommends the continuance of the hydrotherapic treatment during the monthly periods.

It is not so during the period of pregnancy, and, save in quite exceptional cases, pregnancy is an absolute contraindication. Is it the same during lactation? This question may be answered in the negative, and women who nurse their babes, and who are run down and exhausted by lactation, may derive a decided benefit from cold douches. Only, these douches may provoke a return of the menses, and this is a point to which your attention should always be directed.

Much care and judgment should also be used in the administration of hydrotherapy to women, because of the readiness with which the uterus and its annexes may be congested. Under the influence of cold-water applications, the blood is driven from the surface to the internal organs; hence it is that we sometimes see uterine and ovarian congestions ensue after the use of cold douches, especially when these have been of too long duration. I advise you, then, to make these douches very brief when administering them to your female patients, and to douche the feet with warm water, or give a warm-water foot-bath during the application of the cold douches.

As for the physician, the question which presents itself with regard to sex is the following: Should the physician himself apply the douches to his female patients?

Certain hydropathists have taken the ground that the physician alone is capable of administering the douches; therefore, faithful to their opinions, they never intrust to others these cold applications. This I believe to be a mistake. That the physician knows best how these douches should be given I freely admit, but that, when he has given precise directions, he alone is competent to carry them out, seems to me to be nonsense.

Fleury, who had adopted this notion, and who rigorously stuck to it, had an opportunity of experiencing its practical working, and the scandals connected with a celebrated lawsuit, which the people of this generation have not forgotten, sufficiently indicate the dangers attending such a mode of practice.

You can, then, safely leave the administra-

tion of the douche to female assistants trained for the purpose.

The manner in which patients tolerate the douche furnishes certain general indications and contraindications. The excessive sensitiveness of some patients is such that they cannot bear the application of cold water, which provokes suffocations and palpitations sufficiently intense to render the douche exceedingly painful. In these cases, you will have to accustom your patients to the action of cold water by beginning with tepid douches, and using douches of decreasing temperature till the aversion to cold water is overcome.

There is another quite frequent result of the cold douche when the application is made to the head; I allude to those painful sensations about the head, which are chiefly characterized by a very uncomfortable feeling of tightness in the temples, and to which the name of *hydrotherapic cephalalgia* has been given. You can avoid this headache by the following means: either take care not to douche the head, or apply douches at the same time to the feet with warm water at 40° or 50° C., or, still better, place the feet in a tub of water at 38° C. You may also employ the douche with decreasing temperature, of which the initial temperature shall be from 24° to 28° C.

Certain patients do not react under the influence of cold water, or they react incompletely. As it is this reaction which we always desire to obtain in the applications of cold water, it is well to give particular attention to this point, and you can combat this incomplete reaction either by giving douches of four or five seconds' duration, or by employing the Scotch douche, and especially by favoring the cutaneous circulation by dry frictions and by movements.

Not every patient can with impunity be subjected to hydrotherapy, and there are diseases which constitute a formal contraindication to the employment of this therapeutic agent. Therefore you ought carefully to examine your patient before advising cold-water treatment. Your examination should pertain especially to the state of the heart, the blood-vessels, and the lungs.

The organic diseases of the heart constitute a contraindication to the employment of cold water, as the impression of cold provokes cardiac perturbations which may have, and which have had, fatal consequences.

The state of the blood-vessels, and, in particular, arterio-sclerosis, whether affecting the aorta or the vessels of the encephalon, may require of you great prudence in the employment of hydrotherapy. There is reason in these cases to fear the production of too active encephalic congestions, which may lead to the rupture of degenerated capillaries.

As for affections of the lungs, authorities are far from unanimous on this subject, and when I come to speak of the indications for hydrotherapy in the treatment of wasting diseases, and, in particular, of pulmonary phthisis, I shall show you that if here in France we are little inclined to douche our tuberculous patients, it is not so in Germany, where we see the cold-water treatment undertaken even in the most advanced periods of tuberculous diseases.

The acute or subacute intercurrent affections which supervene in the course of a hydrotherapic treatment, in most cases call for suspension of cold-water applications. But in this question of interdiction we should make due account of the intensity of the affection, and while a severe bronchitis should be an indication for interruption of the treatment, a slight cold need be no reason for its discontinuance. You should be guided in these cases by the resistance of the subject.

Hydrotherapy may be practised in all seasons, and in the coldest winter weather as well as in the hot days of the summer the cold-water treatment may be carried out. It is well to remember, however, that in proportion as the surrounding temperature falls, the douches are the more painful; hence spring, summer, and early autumn are the more suitable seasons for commencing a water-cure course.

We have considered successively the general indications and contraindications based on the state of the subject and the season of the year, and it remains for me, in accordance with the plan I have marked out, to say a few words about hydrotherapic establishments.

These establishments render us great service. Completely equipped with every kind of apparatus, directed by men who make a specialty of hydrotherapy, often placed in sanitary and mountainous situations, where the water-cure methods are supplemented by an admirable hygiene, these establishments furnish the very best conditions for the restoration of our patients. But let us not forget that they are not indispensable, and, save in cases where the application of cold water demands extreme skill and care, one may obtain all the benefits of hydrotherapy in the bathing establishments, which are to-day, for the most

part, furnished with special apparatus, or the water treatment may be carried out at the homes of patients.

Among the conditions which call for the placing of patients in a special establishment of hydrotherapy, we may reckon certain neuroses, and especially hysteria. In the case of many neuropathic patients, and hysterics in particular, it is absolutely necessary for their successful treatment that they should be removed from their surroundings and placed among strangers, and here the hydrotherapic sanitarium supplies a desideratum. Unfortunately, it is principally nervous patients that resort to these establishments, and the hysterical female leaves one environment particularly adapted to foster her malady for another which is almost as unfavorable.

Whether you direct your patient to one of these fashionable water-cures, or to an ordinary bathing establishment, you must be particular in your instructions as to how you wish to have the cold-water treatment applied. You will then indicate the nature of the douche, its temperature, its duration, the parts of the body which you desire to be affected by the douche, the measures to be taken after the douche, etc.; and the more careful you are in your directions, the more the patient will realize the importance which you attach to this mode of treatment.

Having now finished these general considerations, we will pass rapidly in review the different chronic affections where hydrotherapy may be applied with success, and we will follow the order which I laid down at the beginning of this lecture.

Hydrotherapy being *par excellence* tonic in its effects on the general system, and reconstituent to the blood-corpuscles, is one of the most useful modes of treatment in anæmia and chlorosis. Scheurer, of Spa, who has especially insisted on the benefits of the water-cure in chloro-anæmic states, shows that these benefits result from the physiological effects of cold water, effects which are multiple, and may be referred to the six following heads:

1. Greater activity given to the functions of the nervous system.

2. Reawakening of the appetite and improvement of the digestive powers.

3. Better distribution and better repartition of the mass of the blood.

4. Re-establishment of the functions of the skin.

5. Continuous improvement of hæmatopoesis by the regeneration of the globules and their return to the physiological figure and value.

6. Augmentation of the combustions in the anatomical elements of the tissues.

In the treatment of chloro-anæmia you should employ cold douches of short duration. Bottey would not have the duration of these douches exceed two or three seconds, the water not to be warmer than 8° C. (46° F.). Our water-cure establishments seldom give water quite as cold as this, and I would advise that the temperature of the douches should be from 10° to 14° C. (50° to 60° F.), and that the duration should be from ten to fifteen seconds. Reaction must be favored by dry rubbing and by exercise.

According as you have to do with chlorosis associated with menorrhagia or amenorrhœa, your hydrotherapic procedure will vary. In the menorrhagic form, you will douche the feet with cold water, and localize the effects of the douche upon the upper part of the body. In amenorrhœic chlorosis, you will douche the feet with warm water, and direct the main douche to the loins and trunk.

I have said that organic heart-diseases constitute, in my judgment, an absolute contraindication to the employment of hydrotherapy. I believe, moreover, that if in some instances cures have been claimed in cardiac complaints from the use of cold-water applications, it is because heart-disorders which were dependent on anæmia have been confounded with those resulting from valvular lesion. I pass now to the uses of hydrotherapy in diseases of the nervous system.

It is especially in the chronic diseases of the nervous system that usage is made of hydrotherapy; and to give order to my exposition I shall examine successively the applications of cold water in neurasthenia, the various other neuroses, and in neuralgia, and, lastly, in diseases of the spinal cord and encephalon.

The number of neurasthenic and neurataxic patients goes on increasing constantly, and this increase results from the social conditions in which we live. As it is in the treatment of this odd, protean, and ill-defined malady that hydrotherapy achieves some of its most brilliant triumphs, you easily understand that this is one of the causes of the prosperity of water-cure establishments, and in the statistics of the St. André, at Bordeaux, published by Delmas, we see, in fact, that neurasthenic patients constitute sixty per cent. of all the nervous patients treated in this establishment.

It may be said that all these neuropathic invalids, all patients with unbalanced nervous systems, are tributary to a threefold hygienic treatment,—hydrotherapy, gymnastics, and diet.

I have just told you how to employ the cold-water treatment in these nervous disorders; in previous lectures I have spoken of gymnastics, and it remains to say a few words about diet.

Since Bouchard, by his brilliant researches, has called anew our attention to dilatation of the stomach, we may lay down this rule, which admits of but few exceptions, that in the greater number of these neurotic and pseudo-hysterical patients there exists a dilatation of the stomach. We may even add another generalization, that if it is the case of a female, and if the dilatation of the stomach is considerable, there exists concurrently an ectopia of the right kidney.

If the pathogeny of this ectopia is easy to grasp, since the dilatation of the stomach leads to congestion of the liver, which, conjoined with the habit of wearing the corset, explains the depression of the right kidney, it is not so with the relation which exists between the gastro-ectasis and those nervous conditions. Is it the paretic state of the nervous system which, existing prior to the dilatation, has favored the latter? Or is it the dilatation which has determined the nervous phenomena? We do not know; but in any event it is a fact that a judicious dietary regimen, adapted to the gastrectasis, greatly relieves and benefits the patient, and in this regard I cannot do better than to refer you to one of my hygienic lectures of last year.*

But to return to the subject which more immediately concerns us. How ought the water-cure treatment to be applied to the neurataxic? Here all forms of hydrotherapy may be employed, according to the indications furnished by the kind of nervous disorder which you have to treat.

Is it a case of nervousness with great excitability, and exaggerated sensibility of the skin? You require here tempered douches of 28° C. (82° F.), for it is a sedative action which you need.

On the other hand, have you a melancholic, depressed patient to treat? It is the tonic action of cold water which is needed, and you should counsel douches of from 10° to 12° C. (50° to 54° F.), of brief duration, followed by energetic frictions.

Is the state of depression still more marked, and have you to do with a veritable case of melancholic hypochondriasis? You want to produce a still greater stimulation from the cold water, and an excitant effect. This you will obtain by the Scotch douche.

By the side of neurasthenia we must place hysteria, which has with it points of contact so numerous and so intimate that it is often very difficult to separate the two affections, and the diagnostic difficulty is the greater from the fact that we find at the present day a great many hysterical men. Here, too, hydrotherapy is of great utility, and as in the case of the neurosis just mentioned, the methods of the water-cure treatment should vary according to the forms of hysteria.

In the forms characterized by excitement, which are much the most frequent, you should use the sedative douches,—*i.e.*, douches whose temperature is 28° to 30° C. (82° to 85° F.). In the depressive forms it is the tonic douches, very cold, and of very short duration, which are the most advantageous, or else the revulsive douches (*i.e.*, the Scotch douches).

This necessity being conceded, of varying the mode of application of hydrotherapy in accordance with the particular type of this multiform malady which is before you, you are prepared to understand the causes of the success, or want of success, which has followed the water-cure treatment of this affection, also the need that the physician should daily watch the results of the treatment.

In the grave cases of hysteria it is necessary to conjoin isolation with hydrotherapy. The hysterical patient often, if not always, finds in her environment elements which encourage or provoke her nervous manifestations. Therefore she must be removed from her wonted surroundings if she would obtain any real benefit from hydrotherapy. You will, then, place your patients suffering from grave hysteria in one of the hydropathic sanitaria, where there are all the modern appliances, and where the patient will obtain entire change of scene. Unhappily, as I have just said, the majority of patients who frequent these establishments being afflicted with nervous maladies, the hysterical female quits one bad environment for another almost as bad. Nevertheless, the effect of the novelty will last for some time; the patient will not all at once fall back into her old habits, and you will be able the first month or so to obtain decided benefit from the change.

Indicated by Giannini as useful in epilepsy, hydrotherapy has been employed in this dis-

* See THERAPEUTIC GAZETTE, January 15, 1887, p. 7.

ease principally by Fleury, by Rosenthal and by Nothnagel; and recently Bricon and Bourneville* have studied its effects in the falling sickness. Their conclusion is that if hydrotherapy is powerless to cure epilepsy, it retards the fits and considerably ameliorates the state of patients subjected to this treatment. Despite the relative inefficacy of cold-water applications in epilepsy, it does, then, render us real service, and especially in keeping up the tone of the system, and preventing too great depression during the administration of the bromides.

When, in fact, one is obliged to give to epileptics daily quantities of 8, 10, and even 12 grammes of potassium bromide, it is impossible not to experience depressant effects from such dosing. Hence it is that such patients are always somnolent, and their intellectual energies are markedly dulled. Hydrotherapy offers almost the only means for combating this torpor and depression, and you should always choose for this purpose the short, cold douches, or the Scotch douches, on which you rely for a tonic and revulsive action.

I shall say but little about chorea. Gymnastics and hydrotherapy constitute the bases of the treatment of this neurosis. You ought here to employ chiefly the tepid douches; and this is the more important because the rheumatic nature of this affection demands great prudence in the external use of cold water.

I come now to the employment of hydrotherapy in the treatment of neuralgia.

Hydrotherapy is an agent which is curative in pain; hence it has been employed with success in the treatment of neuralgias. Here the hydrotherapic formulæ must vary according to the nature of the neuralgia. But, in general, it is the revulsive action which is principally sought, and for this reason the Scotch douche is chiefly employed; some authorities have even endeavored to obtain a more decided revulsive effect by resorting to aquapuncture. This rather cruel operation consists in projecting with great force a filiform jet of water upon the skin; this causes punctiform eschars, the skin being perforated often to the depth of several millimetres, in many places. Despite the success obtained by Siredey with this revulsive procedure, and the cures which are recorded in the thesis of his pupil, Servada,† aquapuncture has been abandoned, it having seemed evident to all observers that this mode of revulsion is much more painful than the other methods in vogue, and without being at all superior.

In neuralgias of rheumatic origin you should resort to baths and douches of elevated temperature; and here you may employ to advantage the hot-air or the hot-moist-air chambers, or the vapor-douches.

The application of hydrotherapy to diseases of the spinal cord and brain has given rise to much difference of opinion and to much discussion, and if there has been such a divergence of views relative to the value of the cold-water treatment in chronic diseases of the cerebro-spinal axis, it is because that authorities have not always taken pains well to define the cases, and especially the periods of the disease, when hydrotherapy is applicable.

In the diseases of the cord, this distinction has the utmost importance. The cold douche, of short duration, directed along the vertebral column with a certain force, determines more or less congestion of the cord, and may be applied with success in all cases where anæmia of this nerve-centre is the cause of the morbid phenomena observed. On the other hand, in all cases where medullary excitation and congestion exist, cold-water applications can only do harm.

Therefore, in medullary congestion, in the myelites in their congestive period, in the scleroses, during the active hyperæmia which precedes the hyperplastic process, the cold douche will be more injurious than useful, and you can only employ to advantage the tepid douches. This is the form of hydrotherapy counselled by Delmas and Beni-Barde. When, on the contrary, the congestive stages are passed, you can relinquish the sedative effects of the tepid douche, and have recourse to the tonic effects of the cold douche.

The treatment of affections of the spinal cord, and sclerosis in particular, demands, then, on the part of the physician, extreme watchfulness and a great familiarity with hydrotherapic practices. Therefore I cannot too much recommend you, gentlemen, to exercise the utmost care and caution in prescribing hydrotherapy to tabetic patients; for you may, by an injudicious employment of cold water, considerably aggravate their situation.

* Bourneville and Bricon, "Clinical and Therapeutical Researches on Epilepsy and Idiocy for the Year 1886," Paris, 1887; Bricon, "On the Treatment of Epilepsy," Paris, 1882.

† Siredey, "On the Treatment of Neuralgia by Aquapuncture" (*Bull. de Thérap.*, 1873, t. xciv. p. 467); Servada, "Thèse inaugurale," Paris, 1872.

What I have said concerning diseases of the spinal cord is also applicable to the diseases of the brain, and the same caution is demanded in the use of cold water in these affections. For my part, whenever I discover material lesions on the part of the cerebrum,—material lesions, be it understood,—I refuse to recommend hydrotherapy, fearing always that the circulatory troubles of the meninges which are produced under the influence of cold water may aggravate the condition of the patient.

I will just mention, without dwelling thereon, the employment of hydrotherapy in the various forms of mental alienation. Hydrotherapy has long been counselled in these affections. But here, as in the case of spinal and gross cerebral diseases, the results have been contradictory, because medical authorities have not always taken pains to specify precisely the indications and rules applicable to each case in particular. All depends on whether the brain is in a state of congestion or anæmia. Take, for instance, a melancholic patient of the depressive type, and here the cold water may give you good results, while in general paralysis of congestive form the cold douche will only aggravate the situation. It will, then, be necessary to use great care and judgment in the employment of hydrotherapy in the treatment of mental diseases.

Hydrotherapy, I have told you, is one of the most powerful modifiers of nutrition; hence, whenever the nutritive functions are altered or disturbed, the water-cure has been recommended. And this leads me to allude to the effects of hydrotherapy in consumption and diathetic disorders.

As type of these consumptive maladies, we will take pulmonary phthisis. In France we are not, as a rule, favorable to the employment of hydrotherapy in confirmed phthisis pulmonalis; and notwithstanding the affirmations of Fleury, and the observations which he has published in support of the cold-water treatment of consumption, the greater part of the medical fraternity do not make use of cold baths or douches in tuberculosis. Some of them go as far as Valleix, who declares that to treat phthisical patients by cold water is to commit an enormity.*

This is not the case in Germany, where we see hydrotherapy applied to the treatment of pulmonary phthisis in its most advanced stages. At the same time, Priessnitz, who was unable to distinguish the different affections of the thorax, refused utterly to treat at Grafenberg any patients affected with cough or dyspnœa.

The most interesting statistics respecting the results obtained from cold water in the treatment of tuberculosis have been furnished by Sokolowski, who has shown us that at the establishment of Gorbresdorf, in Silesia, out of one hundred and six cases of tuberculosis, thus subdivided—sixty in the first stages, twenty-nine with consumption marked, and seventeen in advanced phthisis—after six months of treatment by cold water thirty-nine were cured, thirty-four were notably improved, nineteen were simply ameliorated, in seven there was no result at all, in three the condition was evidently made worse, and four died.†

These statistics are among the most favorable, and if we were to trust to these alone we should deem ourselves warranted in employing the cold-water treatment, even at the most advanced periods of the disease. But I believe that this is going rather too far; and in the treatment of phthisis it is chiefly as a means of prophylaxis that hydropathy will render you service, and Jaccoud has rightly insisted on this point. Powerful modifier of nutrition, cold-water treatment will here come in with the other means furnished by hygiene, and enable you to fortify individuals hereditarily predisposed to tuberculosis, and render their organisms an unfit habitat for the tubercle-bacillus.

When the phthisis is confirmed, it will be necessary for you to be much more wary in the employment of cold-water applications, without at the same time discarding them altogether, for, as Peter has pointed out, we have here a means which enables us to contend with advantage against the night-sweats so abundant and so weakening in pulmonary tuberculosis. Here you will begin with tepid-water or spirit applications, and after each ablution you will give the patient a thorough rubbing, which stimulates and fortifies the skin, and it is only when the patient is habituated to these practices that you can safely make use of cold lotions rapidly applied with a sponge dipped in cold water. But when you have come to the final stages of the disease, I believe that hydrotherapy is more harmful than beneficial.

By the side of phthisis I would place three

* Valleix, *Bull. de Thèr.*, August 15, 1848, p. 103.

† Sokolowski, "Treatment of Tuberculosis by Hydrotherapy" (*Bull. de Thèr.*, 1877, p. 343).

diseases in which the nutrition is profoundly disturbed: diabetes, polysarca, and gout. Here also hydrotherapy may render you great service.

In the diabetes of fat people, hydrotherapy coupled with an appropriate diet treatment and the movement-cure constitutes a line of treatment which enables us to improve the tone of our patients and favorably modify their nutritive functions. You can employ here the cold douches, and bring in the tepid douches or the Scotch douche as adjuvants, if the skin is dry and performs its functions imperfectly.

What I have said concerning diabetes I will repeat with reference to obesity. Here also cold douches, energetic frictions, and massage are positively indicated. There is a hydrotherapic practice which is applicable to the treatment of obesity, which brings about, as many observers have shown, and in particular St. Germain, a rapid diminution in the weight: I refer to the Hamman bath, where are combined the effects of heat and of cold water with those of massage and of frictions.

As for gout, we ought to distinguish acute gout and gout in the interval of the accessions.

In the paroxysms of acute gout there is a hydropathic procedure which often relieves the patient: I refer to wet compresses, with which the inflamed joint is surrounded, and which are frequently renewed.

In the interval of the attacks gout is still tributary to hydrotherapy, which may be employed under three forms: tonic douches, sedative douches, and revulsive douches. In gouty patients who are atonic, a cold douche should be employed; in those that manifest a predominance of the congestive element the tepid douches should be preferred; in others whose skin performs its office poorly you will employ the Scotch douches. But in all these cases, before prescribing these different forms, it will be necessary for you to inform yourself with great care as to the state of the kidneys and blood-vessels, for arteriosclerosis is very common among the podagrous.

Rheumatism in its different manifestations is also tributary to hydrotherapic treatment; not, be it understood, in the acute stages of the disease, nor in patients affected with cardiac complications, but in the chronic forms and in arthritic cases.

The activity given to the capillary circulation of the skin toughens the integument and diminishes its sensitiveness to changes of the temperature; it also energizes the nutritive functions, which are always below par in the rheumatic. Remember that it is necessary to be wary in the outward use of cold water, for you may by careless or injudicious applications see the pains in the joints return. Here, again, you will be likely to avoid this danger by the employment of tepid water.

There is still another mode of hydrotherapy, or, rather, *balneo-therapy*, very serviceable in rheumatism: I refer to vapor-baths, or Russian or Turkish baths. There is also a mode of using vapor of water, which is quite peculiar: I refer to the vapor-douche, which is exclusively reserved for the treatment of rheumatic pains in their acute period.

Hydrotherapy has quite a rôle in albuminuria, and the service which it renders in this disease is readily explicable by the intimate relation which exists between the kidneys and skin. The recent writings of Semmola have even shown us that this relation between the skin and the kidneys is not simply physiological, but from a pathological point of view we find in Bright's disease an alteration of the skin characterized by atrophy of the rete Malpighi and sudoriparous glands. Therefore, since 1861, the physician of Naples has insisted on the necessity of promoting a healthy state of the cutaneous functions in Bright's disease. But all hydrotherapic rules are not applicable to these cases; cold douches at high pressure over the region of the kidneys cannot but have injurious effects, and here we witness the triumph of tepid douches, and even the Scotch douches, in patients who have considerable vital resistance. You can also make use of the dry pack, and, above all, of energetic frictions over the entire cutaneous surface.

I shall have finished this long detail of the applications of cold water in chronic diseases when I shall have pointed out the revulsive effects of these applications in combating the congestion of the splanchnic organs when this congestion has become chronic.

Pre-eminently among these congestions we must reckon those of the liver and kidney. Henry is the most ardent advocate of the hydrotherapic method of combating hyperæmia of these two organs, and the success which he has attained demonstrates the importance of this mode of treatment. Therefore, in the case of individuals returning from hot countries to their native clime with voluminous livers, or in the case of ague patients with greatly enlarged spleen, you will obtain

from cold douches of short duration directed upon those organs a marked resolvent action.

Uterine affections have also been subjected to hydrotherapic treatment, and for this purpose local vaginal douches have been used. You should be very chary in the use of cold-water applications in these diseases. To undertake a water-cure treatment in the various forms of metritis the utmost skill and experience are requisite, for hydrotherapic rules vary according to the periods of the disease, and even according to circumstances such as may daily supervene. But everybody admits the harm which may result from vaginal douches too forcible or too prolonged. These douches, when they thus too harshly strike the uterus, congest that organ and its appendages, and often cause severe abdominal pains.

Like the uterine congestions, rectal and anal congestions may be treated by hydrotherapy. In constipated hemorrhoidal patients, or in such as are affected with prolapsus of the rectum, the cold douche is perfectly indicated. In cases of anal spasm, so frequent an accompaniment of fissure of the anus, you will often see the symptoms disappear under the influence of the peri-anal percutant douche.

Spermatorrhœa is one of the diseases where hydrotherapy is likely to render great service. Here you can employ the percutant douche over the region of the kidneys and on the perineum.

Lastly, in that so frequent infirmity of young children, incontinence of urine, cold water, applied in the form of douches or lotions, is a treatment which ought always to be put in usage.

In this long and tedious enumeration I have omitted many morbid conditions where hydrotherapy has been employed, only pointing out the principal. If you desire more complete information on these subjects, I would refer you to the excellent and masterly treatise of Beni-Barde,* or to the compendious and practical manual of Delmas.†

But hydrotherapy is not applicable solely to pathological cases; it ought to have a large place in your prescriptions of hygiene. By favoring nutrition, by regulating the functions of the nervous system, by promoting the circulation of the various splanchnic organs, hydrotherapy wonderfully assists the healthful development of the human frame. So you ought to insist that in all large educational institutions there shall be a department where the benefits of the cold-water treatment can be obtained.

For my part, during the many years that I have been called to direct the medical service of several seminaries for young ladies, I have always seen great benefit derived from cold douches as a part of the hygiene of these institutions. It is the same with great aggregations of men, as in the army, where cold douches, as a means of cleanliness, as well as for their tonic effect, are always to be recommended as a hygienic measure.

Lastly, at an advanced period of life, the practice of daily resorting to the douche is still to be commended. Therefore we ought to favor and encourage every enterprise whereby, to gymnastic halls and other places for promotion of corporal exercises, hydrotherapic equipments are added.

Such, gentlemen, are the general considerations which I wished to present concerning hydrotherapy as a curative agent in the treatment of chronic diseases and as a means of hygiene. In the next lecture I shall take up the antithermic action of cold water, and its application to the treatment of acute and febrile diseases.

* Traité d'Hydrotherapie. Paris, 1874.

† Delmas, "Manual d'Hydrotherapie." Paris, 1883.

DENTAL IRRITATION AS A FACTOR IN THE CAUSATION OF EPILEPSY.

By Albert P. Brubaker, M.D., Philadelphia, Pa.

IN all the wide divergence of view as regards the nature of epilepsy there is a general consensus of opinion that its essential feature is of the character of an explosive discharge from the higher nerve-centres, the nerve-force thus liberated bearing down upon the centrifugal distributions of the motor nerve-tracks with such an excess of energy that inco-ordination of movement reaches the stage of convulsion and spasm. Owing to the periodicity of the convulsive seizures, it has been assumed that in individuals predisposed to epileptic attacks the higher nerve-centres are in a state of high tension, of unstable equilibrium, and that it only requires a stimulus of a definite quantity or intensity to excite the explosive discharge.

Writers have generally laid it down as an established fact that the majority of the cases of epilepsy are idiopathic, without definite causation, and due solely to heredity; but it can scarcely be doubted that these cases are

properly so classed only as regards the predisposition, and that in them all a morbid action, even though slight in amount, is necessary to call forth the nervous discharge. The morbid process may be centrally located and beyond the reach of investigation, or it may be peripherically located and exciting the convulsion in a purely reflex manner. It is fully conceded by all that injuries to nerves, diseases of the ear, intestinal worms, phimosis, uterine troubles, etc., are all not uncommon peripheral causes resulting in epileptic attacks.

The question has been raised, however, as to whether a convulsive attack due to a peripheral irritation can be regarded as a true epilepsy, and whether it is not to be regarded rather as of an hysterical character. Without attempting to pass judgment upon this subject, it will suffice to quote the recent views of a very competent authority upon nervous diseases, Prof. H. C. Wood. In commenting upon the convulsion due to a peripheral irritation, he says, "It is almost invariably epileptiform in its general symptoms, and may conform exactly to the typical epileptic attack;" and, while admitting that many of these reflex convulsions partake largely of the hysterical character, he further says, "There are, on the other hand, convulsions which conform to the epileptic type, and which are the result of an organic peripheral irritation."*

A remarkable feature of the epileptic convulsion is its periodicity. Now, it is proved beyond question that the higher nerve-centres of the brain act not only as inciting but also as inhibitory centres to those of a lower level. They are at once reservoirs of nerve-force and regulators of its dispensation. If, therefore, a morbid process at the periphery continuously attack, through nervous intermediation, these higher nerve-centres, it follows that these in time must have their resisting power overcome at intervals and at successively higher levels, until a final one is reached, when control is no longer possible. The unremitting irritation having at last overcome the resisting power of the highest nerve-centres, their energy is suddenly liberated and the organism is flooded with waves of uncontrollable centrifugal energy, until exhaustion brings about a temporary equilibrium.

The object of this paper is to direct the attention of physicians to a cause of epilepsy which has not hitherto been estimated at its full value, inasmuch as in none of the standard works upon neurology is the subject even alluded to,—viz., pathological state of the dental structures. That dental inflammations and disorders are more often provocative of epileptic seizures than is commonly supposed appears quite certain from the following cases, and also from the character of the cause and its effect. Many reasons might be given why dental disorders are peculiarly adapted to call forth this periodical discharge, and why these disorders are habitually overlooked by the physician, but they need not be detailed here. As exemplifying these phenomena, some interesting and instructive cases are adduced.

The following case occurred at the Orthopædic Hospital and Infirmary for Nervous Diseases, in the clinical service of Dr. Wharton Sinkler, to whose kindness I am indebted for the privilege of recording it:

CASE I.—Mary L., æt. 9, was brought to the hospital in October, 1886, with a history of epilepsy dating from May of the same year. The convulsive attacks first made their appearance on the afternoon of the same day that the child had had three teeth extracted on account of repeated attacks of toothache. One decayed tooth, however, was left remaining in the lower jaw. Previous to coming to the hospital the epileptic attacks occurred two and three times a week. From all that could be learned from the mother, the symptoms were those of a typical epilepsy. There was no neurotic history in the family. She was placed upon from 3 to 5 drops of the fluid extract of cannabis indica for two weeks, during which period she had twelve attacks. The bromide of sodium was then given for two weeks, during which she had sixteen attacks. From November 1 to March 1, 1887, she continued taking the bromides alone, in combination, and, finally, in conjunction with the infusion of digitalis. During the four months of steady treatment she had forty seizures. About the 1st of March the mother made the remark that the child was always extremely restless at night; that she would lie awake for hours complaining of toothache; and even when asleep she would continually grind her lower teeth against the upper teeth. Examination of the mouth revealed a carious and inflamed condition of a molar tooth in the lower jaw on the left side.

From the history of the case, and the possibility that the irritation arising from the diseased tooth might be the exciting cause of the attack, it was concluded to have the tooth

* "Nervous Diseases and their Diagnosis."

removed. This was done under the influence of nitrous oxide gas. The night following the child rested much better, and from that time forward her sleep became natural, her appetite improved, and her general health became decidedly better. From the last week in February until the present time (December 19, 1887) she has not had a single symptom of an epileptic attack.

That a dental irritation should be capable of exciting an epileptic condition does not appear at all strange when it is fully comprehended how numerous are the recorded cases of ocular, aural, visceral, muscular, and nervous disorders which have been caused by the irritation arising from the pathological conditions of the teeth and associated structures.

The interest aroused by the result of the preceding case led to an examination of medical literature for reports of similar cases. I find that no less than sixteen cases, entirely and immediately cured by the removal of an irritating tooth, have been recorded by different observers, and they are here arranged in chronological order. It is not supposed that this collection embraces all the recorded cases, but it is hoped that it will elicit references to many others, and, what is more important, the reporting of many new cases.

The injurious effects of diseased teeth, and the irritation arising from them, in the production of many general diseases did not escape the acute mind of Dr. Rush. In a paper published in his collected works* he records the following:

Case II.—"Some time in the year 1801 I was consulted by the father of a young gentleman in Baltimore who had been afflicted with epilepsy. I inquired into the state of his teeth, and was informed that several of them in his upper jaw were much decayed. I directed them to be extracted, and advised him afterwards to lose a few ounces of blood at any time when he felt the premonitory symptoms of a recurrence of his fits. He followed my advice, in consequence of which I had lately the pleasure of hearing from his brother that he was perfectly cured."

Dr. Ashburner published,† in 1834, a number of remarkable cases of hysteria, spasms, convulsions, etc., due to diseased conditions of the teeth. Among others was the following case of epilepsy:

Case III.—A young lady of highly nervous temperament was attacked with epilepsy in the eighth month of her first pregnancy. She had two attacks before her labor, which was a very favorable one. Seven months afterwards the fits reappeared, and occurred two and three times a week. Various methods of treatment were resorted to without success. For a while the intervals between the attacks were somewhat longer, and for a while they appeared twice daily. An examination of the mouth revealed seven carious teeth, which were at once removed. Three wisdom-teeth were prevented from erupting on account of a cartilaginous condition of the gums. These obstacles were removed. The epileptic fits at once ceased, and after several years they had not returned.

Case IV.—Albrecht relates‡ the case of a boy, æt. 12 years, who for a period of six months suffered daily with general convulsive attacks. Just preceding the attack there was severe pain in the temporal region. No cause could be assigned for the seizures. Treatment was without avail. Examination of the mouth revealed an overcrowded condition of the teeth, which were in addition unusually large. After removal of some of the teeth the convulsions subsided, and in a short time entirely disappeared.

Case V.—Dr. Tomes publishes§ the following: "A lad, a farm-laborer from Windsor, was admitted into the hospital for epilepsy. The usual remedies were tried for six weeks without effect. His mouth was then examined, and the molar teeth of the lower jaw were found to be much decayed, and of some of these only the fangs remained. He did not complain of pain in the diseased teeth or in the jaw. The decayed teeth were, however, removed, and the fangs of each were found to be enlarged and bulbous from exostosis. During the eighteen months that succeeded the removal of the diseased teeth he had not suffered from a single fit, though for many weeks previous to the operation he had two or three per day."

Case VI.—Dr. Baly records‖ the history of a case of epilepsy from dental irritation, occurring in a man, æt. 45. The patient was an employé in the Millbank Penitentiary; was of good physique; in good health, and had never suffered from vertigo, headache, or any form of nervous trouble. In the latter part of October, 1850, he began to

* "Enquiries and Observations," vol. i. p. 199.

† "On Dentition and some Coincident Disorders," p. 98.

‡ Casper's *Wochenschrift*, 1837, p. 125.

§ "System of Dental Surgery."

‖ *London Med. Gazette*, xlviii., pp. 534–540.

suffer from toothache. On November 4 the tooth was examined by the medical officer, but on account of its carious condition and deficient light it was not extracted. Nitric acid, however, was applied, which gave the patient relief. On the 6th the muscles of the right side of the face began to twitch. The muscular spasms lasted four or five minutes, and occurred three or four times a day. "At these times, when the twitchings had reached a certain degree of intensity, the jaw became locked, and he lost the power of speech; but he had no pain in the head, giddiness, or sense of stupor. The paroxysm of spasm in the muscles of the right side of the face and jaws recurred the next day, and on the following day, the fourth after the examination by Mr. Chatfield (the medical officer), the twitchings became more violent, and his jaw locked. He had the sensation of all his teeth falling out, and then lost consciousness. A strong convulsive fit ensued, which lasted half an hour; the same night he had a second fit." These attacks were described as presenting all the features of an epilepsy. A third attack occurred before morning. The next day the tooth was extracted, together with a small piece of bone attached to the root.

For one month the patient was perfectly well, but on the 7th of December, in the middle of the day, he again experienced the spasmodic twitchings, and at the same time became conscious of the existence of something protruding from his jaw; with his fingers he removed a piece of dead bone. In the evening of the same day the spasmodic contractions of the face occurred several times. On the night of December 8 he awoke with a spasm in the cheek, and upon getting out of bed fell upon the floor unconscious; a general convulsive fit followed, during which there was foaming from the nose and mouth. At 6 A.M. a second fit followed more violent than the first, and lasted five minutes. In the intervals of these attacks there was considerable uneasiness and confusion of mind. The next night he suffered a return of the fit. Examination of the mouth revealed a swollen and tumid condition of the gum, but there was no discernible source of irritation. The patient was placed on calomel to prevent further mischief to the deeper-lying structures around the diseased tooth-socket. He remained well until February 22, when he had, for the space of ten minutes, the same premonitory twitchings in the muscles of the face, but no real fit. A small piece of dead bone was extracted from the gum, after which the old wound healed, and the patient entirely recovered.

In 1857, Dr. Sieveking read* before the Royal Medical and Chirurgical Society a paper entitled "An Analysis of Fifty-two Cases of Epilepsy." In the discussion that ensued Sir Charles Locock said he had noticed in the paper the omission of a very common cause of epilepsy,—viz., dentition. He could not agree with Dr. Ashburner that all cases of the disease could be cured by the removal of the teeth; but he had certainly seen the affection cured in more than one instance by removing overcrowded teeth.

CASE VII.—Dr. Ramskill publishes† the following: "A boy, 13 years old, has had frequent attacks of epilepsy for the last eighteen months. Latterly, his mother noticed that some days he rubs his left cheek, complaining of faceache, after which the fit follows. On examining the mouth, there is to be seen a molar tooth considerably decayed, with a swollen gum around it and partly growing over into the cavity: it is not very tender to the touch, and the examination does not give rise to toothache. On questioning, I find the sensation which the boy experiences before the fit does not seem to be one of pain, but rather of indefinite uneasiness. He always has a fit the night this comes on. Has never felt it during the day; it is always about seven or eight o'clock. I desired the mother to have the tooth extracted, and ordered a simple saline, with ¼ grain of belladonna, to be taken twice daily. This was in June. The tooth was extracted next day. I saw this boy once a fortnight from that time for four months, but he had no recurrence of the fits. In this case I believe an unfelt aura commenced about the gum surrounding the tooth, and was not recognized till some degree of inflammation arose, and thus a modification of pain became associated with the aura and directed attention to it."

CASE VIII.—Trousseau relates‡ the case of a patient, a young notary's clerk, under the care of Dr. Foville, who had been subject to monthly attacks of epilepsy for several years. Many remedies had been tried in vain. Dr. Foville suggested the extraction of some carious teeth which ached constantly. The suggestion was acted upon, and from that day the fits disappeared.

CASE IX.—Dr. Garrett related the follow-

* *Lancet*, June, 1857.

† *Med. Times and Gazette*, 1862, vol. ii. p. 216.

‡ "Clinical Medicine," New Sydenham Soc., vol. i.

ing case before the Suffolk District Medical Society, and was reported by Dr. Page:* "A man, aged 40 to 50 years, had suffered with his teeth for years; these had been extracted and artificial ones substituted. He became paralyzed in the muscles of his face and tongue. There was a peculiar drawing of the mouth, from which the aura epileptica came just previous to the fit; the tongue was inclined to fall back within the mouth; he was fearful of swallowing it. In investigating the case Dr. Garrett removed the false teeth, and found the soldering discolored; he went back to his dentist, had a rubber plate made, and had no further attacks of epilepsy; the paralysis gradually subsided."

CASE X.—W. H. Waite reports† the case of a young woman, æt. 18, who consulted him for treatment for a carious condition of the incisor and canine teeth of the upper and lower jaws. The teeth had been diseased for four years, and were very sensitive. For three years the patient had been subject to epileptic attacks, which were at first quite slight, but had gradually increased in severity. After removal of the diseased teeth and filling of others, the epileptic fits entirely ceased. After some months the fits returned, attended with sharp, shooting pains in the alveolus. Examination showed that several other teeth had become decayed. These were removed, and from that time on there was no recurrence of the epilepsy, and the patient increased in health and weight.

CASE XI.—Dr. Nathan Field reports‡ the case of a boy, about 5 years old, who was suddenly seized with an epileptic fit. In two weeks he had a second attack, which passed away after a few minutes. In the course of the next ten days it was estimated that the boy had a thousand convulsions, occurring every few minutes. No cause could be assigned. It was finally observed that before the appearance of the convulsion there was a twitching of the muscles of the left side of the face. Finally, after a severe convulsion, while the child was unconscious, he drew up his upper lip, when it was observed that the canine tooth had, instead of causing absorption of the deciduous tooth, pushed it outward through the alveolus, the gum, and into the lip. The tooth was removed, and in less than an hour the convulsions subsided and never appeared again.

CASE XII.—Mr. Canton related§ the history of the following case: A strong, healthy boy, æt. 19, who had become the subject of epileptic fits, applied to Mr. Canton for treatment. As the cause of the fits could not be ascertained, it occurred to him that they might be due to the eruption of a wisdom-tooth. The gum was freely incised, and the crown of the tooth laid bare. From that time the fits never returned.

CASE XIII.—Mr. Henry Moon related‖ the following case: "The patient, a girl æt. 21, was brought as an out-patient to Dr. Fogge at Guy's Hospital, and he, finding that her teeth were in a very bad state, sent her to Mr. Moon. She had suffered from fits since she was fourteen, and lately they had become so frequent as to reduce her almost to the condition of imbecility. On examining her mouth, a third molar was found in process of eruption; this he lanced freely. Some carious teeth were extracted and others were filled. Treatment by the bromide of potassium was ordered at the same time. The result was that the fits entirely ceased from the day of her first visit to the hospital. The girl recovered her intellect, and although she was kept under observation for several months, she had no return of the fits."

CASE XIV.—Dr. Schwartzkopf reported¶ the following case in the *Deutsche Monatschrift für Zahnheilkunde*, 1886: "A man, æt. 27, suffered severe pain in the right upper central incisor, which was carious, and consulted a dentist, who filled it. Soon after this a swelling appeared in the hard palate, where an opening formed. The patient was now easy, but the tooth continued loose and tender when touched. The fistula also remained patent and discharging. Ten days after the tooth was filled the patient had an epileptic attack, and these recurred at gradually shorter intervals until, at the end of eighteen months, they occurred several times a week. During this time the patient was treated with bromides, atropine, etc., but without results. The tooth was then extracted, the fistula healed, and the fits ceased, and, at the time of reporting, the patient had remained free from them for four years."

The two following cases are reported** by Dr. Liebert:

* *Boston Med. and Surg. Journal*, November 8, 1860.
† *British Journal of Dental Science*, 1863.
‡ *Western Journal of Medicine*, 1869.
§ *Proceedings Odontological Soc. of Great Britain*, 1880.
‖ Ibid., 1882.
¶ *Journal British Dental Assoc.*, 1886.
** *Deutsche Medizin. Wochenschrift*, September, 1885.

CASE XV.—Emil S., æt. 25, in good health and no neurotic tendency, began to suffer with attacks of vertigo in February, 1883. These attacks lasted several minutes, after which the patient appeared perfectly well. On one occasion, however, the vertigo was so severe that he was compelled to sit down to keep from falling. On one occasion he lost consciousness. By April 25 the attacks had greatly increased in severity. On this day he had had such a severe epileptic attack that Dr. Liebert was called in. The patient had been lying on the floor for fifteen minutes wholly unconscious and most of the muscles of the body in a state of tonic contraction; the pupils were of medium width and insensible to light; there was also a fresh wound of the tongue. After careful inquiry, it was learned that just previous to the attacks the patient experienced a peculiar tickling or crawling sensation in the tongue, an inability to speak words distinctly, and some involuntary movements of the tongue. Immediately after there followed the giddiness, the fall, unconsciousness, etc. Despite large doses of the bromides, the attacks increased in frequency and severity. Finally, in June, he began to suffer with toothache. Examination of the mouth revealed several carious teeth, one of which was very sensitive to percussion. This was extracted, and from that moment all peculiar sensations and motions of the tongue ceased, and there has not been in the past two years a single epileptic seizure. This patient had in the four months several hundred attacks of vertigo and eighteen or twenty typical epileptic convulsions.

CASE XVI.—Young man, æt. 35, cabinet-maker. Began having epileptic attacks on February 3, 1862, which came on almost daily and with increasing severity. On March 5 he had twenty-three seizures. With the exception of toothache he had never been sick. Repeated inquiries elicited the information that from December, 1861, the use of his tongue was for some seconds, or even minutes, frequently rendered difficult, and this fact was coupled with a certain feeling of illness or vertigo. In the attack of February 3, 1862, these symptoms were exceptionally severe, the tongue being drawn to the right side and executing spasmodic movements. Immediately thereafter he became unconscious and fell to the floor in convulsions. The tongue-symptoms were usually premonitory of the frequent subsequent attacks. Owing to the fact that the aura appeared to be connected with the mouth, it was determined to seek for the cause in that locality. As he had had toothache occasionally, several carious teeth were removed. The patient at once declared that he felt an unwonted freedom from a former oppressive feeling, and that he believed he would have no more of the seizures. His conjecture was correct, for he remained free from them from that time forth. This patient had epileptoid vertigo for three or four months and severe epileptic attacks for thirty-eight days.

QUEBRACHO IN THE TREATMENT OF DYSPNŒA.

BY WALTER P. ELLIS, M.D., LIVERMORE, KY.

IN a copy of the THERAPEUTIC GAZETTE, the date of which I do not now remember, appeared an article setting forth the good effects of quebracho (*Aspidosperma quebracho*) as a remedy for dyspnœa. The article attracted my attention the more forcibly from the fact that I had some weeks previous experienced a great deal of trouble from a case in which dyspnœa was the prominent symptom, and had found nothing that gave permanent relief. The article referred to gave such glowing accounts of the efficacy of the new drug in dyspnœa from any cause that I determined to procure a sample and give it a thorough trial in the first case coming under my observation. I accordingly wrote Parke, Davis & Co., who sent me a small quantity of both the solid and fluid extracts, sufficient to test its merits. That was five or six months ago, and since then I have used the drug in several cases, and with such uniformly goodly results that I feel constrained, for the benefit of my brother practitioners, to report my experience in its use, which has been such as to give me great confidence in its efficacy. In the "Working Bulletin" on this drug, sent out by Parke, Davis & Co., I find that a few observers report disagreeable effects, such as "headache, partial unconsciousness, dizziness, and copious salivation," following its continued use for any considerable length of time. These unpleasant secondary symptoms I have not observed in any of the cases in which I have used the drug, although prepared to encounter them by the experience of others. It is very probable that the size of the dose and the manner of exhibiting it have much to do with the production of these untoward effects, and that a proper regulation of these would enable us to obviate them entirely.

The statement that "the frequency of res-

pirations is diminished by the drug the more decidedly the greater their excess has been over the normal condition" I have verified in my cases. In other words, those cases characterized by violent dyspnœa with marked cyanosis are more rapidly and certainly relieved than are those in which the symptoms are less urgent.

Up to the present time I have used the drug in seven cases, distributed as follows: one of abdominal dropsy, causing dyspnœa; two of chronic bronchitis, with pulmonary emphysema; and four of tubercular disease of the lungs; and in all of them it was beneficial to a degree beyond my expectations, in no case failing to materially increase the comfort of the patient. I select one case from each class for report.

Case I.—Mrs. L. W., aged 38, mother of five children, had been in bad health for several years, and in the fall of last year (1886) she began to suffer from ascites. During the past winter she would have frequent attacks of dyspnœa due to the dropsical accumulation in the abdominal cavity, which finally became so severe as to seriously alarm her friends. All the usual remedies had been tried, with little or no benefit, by the practitioner who had charge of the case, and at his suggestion I was called in consultation. In connection with treatment for the relief of her general condition, she was put upon the solid extract of quebracho in 2-grain doses for the relief of the dyspnœa, given at the time an attack was threatened, and repeated as often as was indicated, with the result of affording almost complete relief from this most distressing symptom.

The sample I had obtained was soon exhausted, when I ordered a fresh supply, as the patient was enthusiastic in its praise, declaring that it was "worth its weight in gold." Its use was continued in this case until the cause which had produced the symptom for which it was given was removed by appropriate treatment, and she is now fully restored to health. Its action in this, the first case in which I had used the drug, was remarkable; the difficulty of breathing was at times so great as to be alarming, when 2 grains of the solid extract was sufficient to give almost immediate relief, without any bad effects whatever.

It had no action upon the pulse in this case, except to render it a trifle more full without affecting the rate.

Case II.—A negro man, of more than the ordinary intelligence of his race, 40 years of age, and by occupation a farmer, has been a sufferer from bronchial catarrh, with emphysema, for the past two or three years. He is able to walk about, but the least exertion gives rise to a difficulty of breathing which is very distressing. He had been under my care about eighteen months before I obtained the quebracho, and no remedy that had been administered had been capable of preventing or cutting short the attacks of dyspnœa. Upon the occasion of his first visit to my office after I obtained the drug I gave him the entire sample of the fluid extract, about one ounce, with instructions to take a teaspoonful whenever he felt the difficult respiration, and also to take a dose just before undertaking any of the small tasks which had previously given rise to an attack. Several days subsequently he returned for a fresh supply, saying that it had "acted like a charm," and that with it he was able to walk about his small farm and attend to its management without experiencing to any great degree the ill effects which had previously followed the slightest exertion. He seemed greatly disappointed upon hearing that he had exhausted the supply on hand, but this feeling was somewhat mitigated when he was informed that I would give him the same drug in a different form. I accordingly gave him a lot of gelatin capsules, each containing 2 grains of the solid extract, and instructed him to use them in the same way, —*i.e.*, to take one capsule whenever an attack of dyspnœa was threatened, and also to take one just before engaging in work of any sort. He has now been taking it perhaps six months, and, while his general condition is not much changed for the better, by taking the quebracho as directed he is enabled to prevent or cut short the attacks which had, previous to his beginning its use, made his life a burden to him.

Case III.—Mrs. M. E., a widow lady, aged 63, of a tuberculous family, was treated twenty years ago by her family physician for phthisis, and with such success that she gradually regained her health to the extent that she was enabled to attend to her household duties. But the germs of the disease were not entirely eradicated from her system, and for the past four or five years she has been a sufferer from that dread disease. It is unnecessary to give a minute description of her physical condition at the time she came under my care, suffice it to say that she presented all the symptoms of a fairly well-developed case of pulmonary tuberculosis. Upon awaken-

ing in the morning she would be seized with an attack of coughing, accompanied by great dyspnœa of an asthmatic character, which would last sometimes for several hours, and, passing off, would leave her in a greatly weakened and helpless condition. Under appropriate treatment the cough was considerably relieved, and she seemed better in every respect, with the exception of the dyspnœa, which continued to return at irregular intervals, and at times was so severe as to be alarming. At this juncture I determined to give the quebracho in combination with remedies for the relief of the cough, and accordingly wrote the following:

℞ Syr. prun. virg.,
Syr. tolutani,
Ext. quebrach. fld., aa ℥i;
Acid. hydrocyanic. dil., gtt. xxiv;
Morphiæ sulph., gr. iss.
M. ft. sol.

Sig.—Take a dessertspoonful as often as necessary to afford relief.

After the first two doses, each containing two-thirds of a drachm of the quebracho, the difficulty of breathing was very considerably reduced, the respirations sinking from 46 to 24 per minute in three hours, and by continuing it according to direction she was enabled to enjoy a longer period of comparative ease than she had experienced for months.

As before mentioned, these asthmatic attacks showed a tendency to come on in the early morning shortly after awaking from sleep, and, with the object in view of preventing them if possible, I gave this prescription,—

℞ Ext. quebracho, gr. xviii;
Morphiæ sulph., gr. iss.
M. ft. pil. No. xii,—

with instructions to take one pill every morning as soon as she awoke, and before attempting to rise, to be repeated in an hour or two if required. While this did not prevent the paroxysms entirely, it had the effect of shortening them very materially and lessening their severity. The good effects observed from it were sufficient to induce her to continue its use for two months, at which time she removed to a neighboring city and passed from under my care.

In conclusion, I would say that, while my experience with this drug is as yet limited, it has been such as to give me confidence in its power to relieve to a great degree this distressing condition which so often complicates the diseases of the respiratory and circulatory systems, and to convince me that it is entitled to more extended use in all cases in which dyspnœa is a prominent symptom, no matter what may be the primary cause.

As to its mode of action, the theory of Penzoldt, which is that the drug by its peculiar influence exerted directly upon the blood enables it to absorb more than its usual quantity of oxygen, is probably the correct one.

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*COCAINE TOXÆMIA.**

By J. B. Mattison, M.D., Brooklyn, N. Y.

At a meeting of the New York Neurological Society, November 5, 1886, Dr. Wm. A. Hammond, in the course of "Some Remarks on Cocaine," expressed his disbelief in the toxic power of that drug, declaring "he did not believe any dose that could be taken was dangerous." In a paper by the writer on "Cocaine Dosage and Cocaine Addiction," read before the Kings County Medical Society, February 15, 1887, evidence was presented to prove this opinion a mistaken one. This proof, furnished by forty different authorities,—English, French, German, Austrian, Russian, and American,—cited more than fifty cases to support the assertion that there is a danger, near and remote, in the use of this drug on some patients, that does not warrant such reckless disregard of care as the opinion referred to implies.

The cases noted more or less in detail showed that cocaine caused toxic symptoms, so marked in four as to be fatal. The amount of the drug used varied from a small fraction of a grain to twenty-four grains, and was applied to the eye, ear, nose, throat, larynx, teeth, gums, stomach, bowel, bladder, uterus, urethra, and under the skin. The symptoms noted were nausea, vomiting, headache, deafness, blindness, loss of taste and smell, profuse sweats, cold perspiration, lividity, gastric cramp; frequent, feeble, irregular, intermittent, uncountable pulse; shallow, gasping, irregular, difficult convulsive, suspended breathing,—artificial respiration required in some cases; gait, speech, and swallowing greatly impaired; rigid muscles, palpitation, sense of suffocation, and great constriction about chest; loss of motion and sensation in arms and legs; general numbness; intense restlessness, extreme prostration, giddiness, faintness, feeling of impending death; unconscious-

* Read before the American Association for the Cure of Inebriates, November 8, 1887.

ness, convulsions, paralysis, hallucinations, mania, delusions, delirium,—death.

Summarizing, it was asserted:

Cocaine may be toxic, sometimes deadly, in large doses.

It may give rise to dangerous, or even fatal symptoms, in doses usually deemed safe.

The danger, near and remote, is greatest when given under the skin.

In further proof of these conclusions, added evidence of over forty cases is herewith appended.

Two more cases of fatal effect from cocaine have been reported,—one in dental practice in Poland, the other in France, but the writer has not yet been able to secure the desired details.

Dr. Samuel T. Earle (*Maryland Medical Journal*) noted these cases: "Mr. Z. presented himself for the treatment of hemorrhoids. Found on examination one external and several small internal hemorrhoids, which I decided to remove by the clamp and cautery. March 5 I proceeded to do the operation. I injected in the subcutaneous tissue around the anus about 1 drachm of a four per cent. solution of cocaine, which amounted to about two grains of the drug. In about five minutes after the injection, and before I had taken any other step in the operation, he complained of strange feelings in his legs, accompanied by a twitching of the muscles. In a few minutes more these twitchings amounted to decided general tetanic convulsive movements, which involved all the muscles of the trunk and extremities. By the time these convulsive movements had become general, he complained of fulness in the head, and soon became unconscious, remaining so for about five minutes. As the convulsive seizures gradually subsided, he regained his consciousness, but that, too, only gradually. For instance, would answer me, look bright, and said he felt all right, but in a few seconds more would complain of fulness in his head, and become drowsy. This occurred several times before he recovered entirely. Altogether the attack lasted about half an hour. His pulse was weak, although it could not be felt very well on account of the convulsive movements. Pupils slightly dilated. The following day found the patient doing very well, only complaining of some soreness in his muscles."

Case II.—Female; operation for hemorrhoids; cocaine to produce local anæsthesia. "I injected a solution of the drug containing altogether about 5 grains of muriate of cocaine. In about fifteen minutes, without any premonitory symptoms, except a little nausea and faintness, she was seized with violent general convulsive movements, which were so strong, and so much more pronounced on the right side, on which she was lying, as to turn her over on her belly. She had opisthotonos, entire loss of consciousness for about five minutes, after which it gradually returned, and seemed entirely restored at the end of fifteen minutes. Asphyxia; muscles of the lower jaw violently convulsed; pupils unevenly dilated after consciousness began to return; mouth drawn to the right side; speech decidedly thickened for some minutes after her return to consciousness; respiration very labored, and at the height of the attack was arrested for some seconds; pulse very feeble; cutaneous surface decidedly blanched where not purple, until after consciousness began to return, when it alternately became flushed and pallid; she now broke out in a profuse sweat. There was great prostration following the attack and a disposition to sleep. She recovered entirely after several hours, and only complained of feeling tired. This patient had never had any nervous attack of any kind previously, and both patients were remarkably robust and healthy."

Dr. J. Howell Way (*Medical News*) asserts his personal experience with cocaine was "an experiment, which proved a very dangerous one, and came very near terminating fatally." At 6 P.M. he injected ¼ grain Squibb's cocaine under the skin of his forearm. No result ensuing, the injection was repeated in fifteen minutes. At 6.30, general symptoms not having appeared, ½ grain was taken, making one grain within half an hour. In ten minutes systemic effects began; he became restless; respirations 30, shallow, and sighing; pulse 120; had aphasia and increasing præcordial oppression.

"It was now 6.50 P.M. Twenty minutes had elapsed since taking the ½-grain injection. My pupils were dilating slowly; mental faculties perfectly clear and collected; no pain in head or other part of body; respirations reduced to normal frequency, but very shallow and sighing; pulse 140, quick, feeble, and barely perceptible at wrist. I walked about the room for three or four minutes, when I grew weak and exhausted, and was compelled to lie down on the lounge.

"At 7.20 P.M. my condition was almost that of collapse. Mental faculties perfectly clear and natural; pupils widely dilated; mouth dry, and a sensation as of the presence of a foreign body in the pharynx; respirations

shallow, sighing, and reduced to 11 per minute; pulse elevated to 180, very feeble, fluttering, and extinct at wrist; extremities cold; body was warm to the touch, but my own sensations were those of intense cold. I was placed in front of a large fire, and my body enveloped in heavy woollen blankets, while my feet and hands were briskly rubbed.

"A sense of impending dissolution came over me,—not a feeling of fear, but a conviction that my physical condition was such that death was almost inevitable. My mind remained perfectly clear, and I gave my attendants all directions as to my care. I took frequent doses of ammonia and digitalis; the former seemed to be of very great advantage.

"At 7.30 P.M. my condition was worse, and myself and attendants were momentarily expecting my death. My extremities seemed to lose all power of either motion or sensation. I struggled against this with all my will-power, and would call for frequent doses of ammonia, which would give me (so it seemed) sufficient strength to move. Painful emesis occurred twice, each time being attended with the ejection of about two ounces of white, frothy matter, which soon evaporated, leaving only a faint white residuum. Respirations were now only 9 per minute, and exceedingly shallow; carotid pulse faintly beating at 200; radial pulse entirely imperceptible, and no impulse of heart-beat felt on palpation. Mind still clear. Suffered no pain.

"I remained in this state for about half an hour, during which, in addition to frequent small doses of ammonia and digitalis, I inhaled 3 drops of nitrite of amyl. A marked improvement in the cardiac action was now noted. Respirations increased to 14 per minute; pupils contracted to normal; and skin became moist and warm. At 10 P.M. the radial pulse returned, was full, and reduced to 140. Respirations were of normal frequency and of almost normal vigor. Improvement continued. At 11 P.M. respirations normal, pulse 120. Suffered at this time from a dull, aching pain in lumbar region of spine, and sense of great weakness and prostration. Half an hour later very copious diuresis took place.

"At 1 A.M. was entirely well, save the feeling of exhaustion naturally following so great a derangement of the vital functions. Was now removed to my room, and slept soundly until 8 A.M. During the day I suffered much annoyance from the very dry state of my pharynx and also from muscular weakness. Both these inconveniences disappeared during the following night."

Dr. Bullock (*Boston Med. and Surg. Journal*) reports the case of a man, aged 24, in which he used 40 minims of a four per cent. solution, by spray and injection, for local anæsthesia prior to tonsillotomy. Three hours later patient was suddenly seized with very severe headache, vertigo, nausea, flushed face, difficult respiration, and delirium. "When I first saw him he was tossing about in bed in a half-unconscious condition, muttering to himself. I was able without much difficulty to rouse him sufficiently to answer questions, after which he quickly relapsed into his former condition.

"He complained of tingling sensations in the extremities, dryness and constriction of the throat, 'burning sensation' in the stomach, nausea, and intense headache. The pupils were widely dilated, there was some cyanosis of the face, but not of an extreme degree; respirations varied from 10 to 14; pulse was 126, and very weak. I at once administered 1 ounce of brandy, and a few minutes later 20 drops of tincture of digitalis. This was vomited fifteen minutes later.

"I then gave a subcutaneous injection of 5 grains of carbonate of ammonia, and applied hot sinapisms to the chest and epigastric region. A little later I again gave some brandy and digitalis, and this time it was retained. In about twenty minutes the pulse grew stronger, beating 115, and the respirations became less labored. I kept on administering brandy and digitalis at frequent intervals, and at 5 P.M. had the satisfaction of seeing the patient drop off into a quiet sleep. Pulse was 105, and quite strong, and respirations 18, while the cyanosis of the face had nearly disappeared. He slept quietly until 9 P.M., when he awoke and stated that he felt much better, but still had some headache. Pulse was 95, and respiration 20. He soon went to sleep again, and slept quietly the greater part of the night. The next morning (the 16th) he complained of a good deal of numbness and tingling in the extremities, intense dryness of the throat, and blurred vision. These symptoms gradually passed off during the day."

Dr. A. N. Blodgett (*Boston Med. and Surg. Journal*) cites case of Dr. R., age 23, well and strong, to whom he gave, subcutaneously, for local anæsthesia, 3 minims of a twelve per cent. solution. "Thirty seconds after the injection was made the patient began to complain of a feeling of great depression, a sen-

sation of coldness, and of faintness. It was thought at first that these sensations were due to fright, or to an undue amount of apprehension as to the action of the drug, but this proved to be erroneous. The patient rapidly became cyanosed, the breathing changed to a sighing character; the pulse was 140 and weak; the face was bathed in cold perspiration; there were short periods of profound collapse, with unconsciousness. The patient was assisted to a couch, where he soon became quite helpless. Stimulants were administered, the heat of the surface was maintained, and the body warmly covered. At the expiration of a quarter of an hour the finger on the pulse showed a commencing improvement in the patient's condition. With the restoration of the organic functions came a mild form of delirium, the patient talking incessantly upon all possible subjects, and apparently not realizing that he had been in any abnormal condition. Soon the pulse was reduced to 80 per minute, and the skin became warm. The delirium gradually subsided, and the patient slowly returned to his natural state."

Dr. McIntyre (*St. Louis Med. and Surg. Journal*) reported the case of a man, aged 40, to whom ½ grain was given subcutaneously to remove results of a rum debauch. It caused partial paralysis, slow, difficult breathing, pulse of 140, and complete inability to talk or swallow. "Patient was in a serious state for some time."

Dr. Stickler (*Med. Record*) injected 5 drops of a twenty per cent. solution prior to opening a small cyst. It caused vertigo, headache, nausea, diarrhœa, and insomnia, which persisted for three days.

Mr. R. Steer Bowker reports this case: 1 drachm of a six per cent. solution was instilled prior to and during enucleation of eye. Thirty minutes after the first cocaining "she became very faint, face blanched, lips cyanosed; felt very sick; pulse rapid and feeble." She rallied, but two and a half hours later the doctor was hurriedly summoned. "On my arrival she was better, though faint, with cold extremities and rapid pulse. Hot brandy and water, and she was soon all right. I used less than 4 grains, and yet I think it would have taken but little more in this case to have caused a fatal result."

Dr. James Magill recorded the case of a guardsman of fine physique, in whose foreskin he injected 1 grain of cocaine prior to slitting the prepuce for phimosis. In fifteen minutes patient was so extremely pallid, and complained of such præcordial pain, with very slow, irregular, intermittent pulse, that the operation was deferred. "This grave condition lasted twenty minutes."

Galezowski reported the case of a girl, aged 12, in whom the instillation of 15 drops of a two per cent. solution caused severe headache, marked malaise, tottering gait, and difficulty of speech as if tongue were paralyzed, persisting thirty hours.

Mr. Adams Frost noted a lad, aged 14, in whose eye 1 drop of a one per cent. solution was instilled. In a few minutes there were blue lips, pallor, profuse sweat, and small, slow pulse. Ammonia was given, but it was nearly an hour before he recovered.

Heuse recorded the case of a female, aged 70, in whose eye 3 drops of a two per cent. solution were instilled, followed by great dyspnœa. The next day 6 minims caused dyspnœa and vomiting, and later a smaller instillation produced the same symptoms.

Mr. A. Roberts (*London Lancet*) injected 60 minims of a six per cent. solution prior to amputating breast. Patient became blind, and talked incoherently. Blindness lasted four hours.

Mr. Mayo Robson mentions two cases. In one, cocaining—amount of drug not stated—prior to circumcision was followed by severe syncope; the other, before removing nasal polypus, caused aphasia for four hours.

Dr. Barsky (*Brit. Med. Journal*) cited a case in which 1⅛ grains caused pallor, vertigo, general numbness, dysphagia, dyspnœa, chest-oppression, and vomiting.

Dr. Walter Tothill (*London Med. Record*) reported a case of a girl in whose gums 1 grain was injected. In ten minutes she became unconscious, remaining so for two and one-half hours. Another, male, aged 27, cocaine was applied in the same way prior to extraction. "Within a minute he became violent, his pupils enormously enlarged, pulse beating six times with each inspiration, face pale, with dark lines round mouth and eyes."

Schubert noted case of a strong, healthy, non-nervous female, aged 28, in whose gum 6 minims of a twenty per cent. solution were injected before extracting a tooth. In ten minutes vision was impaired, gaze fixed, and she soon became quite blind and unconscious.

Dr. George O. Williams (*New York Med. Journal*) reported that he injected ½ grain of Squibb's cocaine—three injections five minutes apart—for local anæsthesia, prior

to removal of small tumor from forearm. Ten minutes after last injection there were general numbness of forearm, excessive dryness of throat, pupils dilated, vision so disturbed that he could not distinguish acquaintances at forty feet, and his gait was staggering. Symptoms persisted two hours. Visual disorder and dry throat continued through a sleepless night, and toxic symptoms persisted, in part, for nearly a week.

Dr. Call, in a paper before the Madrid Medical Chirurgical Society, stated that he found 50 centigrammes of a one per cent. solution injected into the bladder caused convulsive movements.

Dr. Emmett Holt (*New York Med. Journal*) reported five cases of children, aged 3 to 21 months, suffering from whooping-cough, in which the use of a four per cent. solution by swabbing or spraying caused toxic symptoms. They were vomiting, great restlessness, rapid, shallow respirations, pulse too frequent to be counted, pupils widely dilated, profuse perspiration, temperature rise to 102° F., constant and disconnected talking, marked delirium and convulsions; "very critical condition." In a child, 4 months old, one swabbing with a four per cent. solution caused well-marked toxic symptoms; and "alarming" effects followed two sprayings of the same solution in two infants, 3 and 6 months old. His opinion is "cocaine must be used with great caution in young children under all circumstances."

Grube injected 1¼ grains in a woman for local anæsthesia. It caused pallor, vertigo, vomiting, general numbness, pulse-weakness, difficulty in swallowing, chest-oppression, and dyspnœa.

Dr. Heimann cited a case of a melancholic female to whom he gave ⅔ of a grain, subcutaneously. In five minutes she became very maniacal, continuing nearly an hour.

Schnyder reported a case of a druggist who took two doses of ¾ grain each, forty-five minutes apart, for relief of headache, causing loss of sensation, trembling of hands and feet, spasms, cold extremities, thready pulse of 150, labored breathing, intense headache, jactitation, gesticulation, and delirium.

Bresgen put a pellet of cotton-wool moistened with 4 to 6 drops of a twenty per cent. solution to the nostril of his wife. It caused chilliness, nausea, unsteady gait, excitement, followed by depression, difficult articulation, and restlessness, which continued for a whole night.

Dr. F. Tipton reported to me the case of a vigorously healthy female in whom he injected 4 minims of a four per cent. solution for local anæsthesia. In five minutes she was "deathly pale, vomiting, feeble, frequent pulse, sighing, hiccoughing, and complaining of great numbness, with a sense of impending death." Symptoms persisted three hours.

Heymann observed the case of a boy aged 10, in whom cocaine applied by brush to larynx caused apathy, continuing five hours.

Minney noted two cases of toxic effect from repeated applications of a four per cent. solution to the nostrils.

Dr. Howell Way gave me details of four cases observed by him, in which 5 to 60 minims of a four per cent. solution, instilled or injected for local anæsthesia, caused toxic symptoms,—blanched face, blue lips, aphasia, dyspnœa, hallucinations, delirium, and unconsciousness.

Dr. George N. Monette (*Journ. A. M. A.*) noted three cases occurring in dental practice, in which 2 to 4 drops of a twenty per cent. solution injected in the gums caused vertigo, blindness, cold perspiration, and inability to walk,—"completely unnerved; acted as if deranged."

Dr. R. M. Griswold informed me of a lad, aged 15, in whom he injected 15 drops of a four per cent. solution for local anæsthesia. In four minutes patient complained of faintness, vertigo, had stertorous breathing, with thready pulse of 160, and became blind and unconscious.

Manheim noted a woman in whom the subcutaneous injection of 2 decigrammes caused dyspnœa, irregular and suspended breathing, dysphagia, and agrypnia, lasting thirty hours.

Gougenheim has collected a number of cases in which cocaine solution, applied to the throat, was followed by urgent symptoms.

Conclusions:

There is a lethal dose of cocaine.

This dose is uncertain.

Toxic effects are not rare.

They may be the sequence of doses large or small, in patients old or young, the feeble or the strong.

This risk should induce caution.

Antidotes should be at command.

These are nitrite of amyl and morphine hypodermically.

314 State Street.

*THE PTOMAINES—THEIR FORENSIC AND PATHOLOGICAL IMPORTANCE.**

By L. Wolff, M.D.†

THE toxic effect of decaying animal matter has been known from the earliest times. The savages of uncivilized countries rendered their arrow-heads poisonous by steeping them in decaying carcasses, and many medical investigators have paid with health and life for their thirst for knowledge when making dissections with wounded hands. It was then already recognized that the source of the poison was inherent to the carcass, but it was not understood that the germs for its production were thus only transplanted, and that the toxic effect originated from their action on the new soil. It was reserved for the scientists of the last two decades to unravel the mysterious surroundings of their existence, and to recognize the chemical post-mortem changes to which they owe their presence. How vast since the days of Pasteur our views have been changed in regard to the nature of decay and putrescence, and the revolution created thereby in medicine, I scarcely need mention here. Sepsis and antisepsis prove beyond all doubt the chemical influence of the microbe. That such a complex molecule as that of the albuminoids should be capable of being preserved intact when protected from the inroads of the almost ubiquitous micro-organisms would prove beyond doubt that its molecular decomposition, empirically termed decay and putrescence, is due solely and wholly to the influence of the bacterium. It tends to show, besides, that the organized body after death does not bear within itself the means of self-destruction and chemical decomposition.

In a methodical study of our subject there present themselves for our consideration three points,—to wit, 1. The agency, as the micro-organism; 2. The material for its elaboration or soil; and, 3. The one to which I will give my main consideration to-day,—their chemical products.

Various basic substances developed during the life of organized individuals owe their existence undoubtedly to chemical influences otherwise than those exerted by microbes; such are the alkaloids of plants, and the leucomaines of Gautier, to be mentioned hereafter. From the dead tissues, however, no such products are developed, only by external agencies. It is a well-known fact that there are a great many distinct and different micro-organisms, as proven by their structure and form, as well as by their habits and products. The saccharomytes cerevisiæ cannot induce acetous, lacteous, or butyric fermentation any more than the bacterium thermo can split up glucose into alcohol, carbon dioxide, and water. Still, with the results attained by all of them the tendency remains the same, to disintegrate the complexer molecule into a simpler one with by-products as various as are their different forms and the soils they act upon. This latter forms a very important and material part of our study, for while the first-mentioned germ may break up certain carbohydrates, it has no power to induce splitting up of nitrogenized matter. Thus, microbes can certainly not be considered as catalytic agents, as they must be able to utilize the soil they thrive upon as their natural pabulum, breaking up by hydration the molecule, rather than consuming it, and giving rise to the products thereof as excreta. To be able to appropriate to themselves part of the culture-material is one of the first principles for the disintegration of the latter, with the formation of simpler compounds in consequence thereof. Were the product a single one, it might be argued that it was simply excretory in character, but as the splitting up of the proteid molecule results in various products, the argument would favor the decomposition of the molecule by withdrawal of some of its component parts. The microbe given as a natural chemical factor, with the soil as containing material for its existence and propagation, the product would be dependent for its character upon their proper relation. Of these two, the basic products so derived constitute what are now known to us as "ptomaines," from ptoma, the fallen beast or carcass. To distinguish them from the similar results of vegetable life they are also called cadaveric alkaloids, or, better still, the alkaloids of decay.

The first to isolate an alkaloid from the tissues and fluids of the dead body were undoubtedly Dupré and Bence Jones, who extracted in 1866, by means of acidulating with sulphuric acid the masses operated on, separating the extract and neutralizing it, and then shaking it with ether, a basic substance. This was precipitable by iodine, iodohydrargyrate of potassium, phospho-molybdic acid, and the chlorides of gold and of platinum.

* Read at the meeting of the Philadelphia German Medical Society, December 12, 1887.

† Demonstrator of Chemistry, Jefferson Medical College, etc.

On account of its fluorescence with sulphuric acid, it was called by them animal chinoidin. Sonnenschein and Zülzer separated in 1869 from liquids which had contained anatomical preparations, as well as from muscles and tissues, microscopical crystals, which gave the chemical reactions for atropine and hyoscyamine, which, when instilled into the eyes of rabbits and dogs, produced marked mydriasis, increasing the cardiac action when injected into the jugular vein of rabbits, and completely paralyzing peristalsis.

Rorsch and Fassender discovered in 1871, during a toxicological analysis, in which they employed the Staas-Otto method for the separation of alkaloids, a basic body in the liver, spleen, and kidneys, which gave alkaloidal reactions. Like digitalin, it gave a precipitate with phospho-molybdic acid which was gray, and turned intensely blue on addition of ammonia. Schwanert also separated about that time from a cadaver by the same method an alkaline fluid of the odor of trimethylamine, of bitter taste, forming crystals as a chlorate, and giving white vapors on addition of sodium hydrate, also answering many of the alkaloidal tests.

About the same time the now lamented Francesco Selmi brought out the importance of the ptomaines for forensic medicine by his brilliant researches in a poison case, upsetting the expert testimony which tended to convict the accused. This was during the celebrated trial for the supposed murder by poison of the Italian general Gibbone, whose servant stood accused, on circumstantial evidence, of having administered to him the poison. Two prominent experts declared to have found delphinine in the intestines of the deceased. Selmi proved incontestably that the same reactions as produced by the experts for the prosecution would also result from a ptomaine obtained by him in the usual manner from the alkaline fluids of animal substances by extraction with ether. He showed, besides, that delphinine responded to many reactions which the substance derived from the deceased's body did not yield. Professors Ciaccia and Villa, of Bologna, demonstrated over and above this that the base obtained from defunct's body did not coincide in physiological action with that of delphinine.

This, of course, tended to revolutionize all dogmas in regard to poisoning by alkaloids, and the medico-legal proofs of their existence, especially as subsequently strychnine and morphine were also found to be closely simulated in their reactions by those of certain ptomaines.

In the case of the widow Sonzogna, in Cremona, whose body was exhumed twelve days after death, and where morphine was asserted to have been found, Selmi again, by an extended series of reactions and physiological experiments, proved without doubt that the supposed morphine was nothing but a cadaver alkaloid of similar chemical reactions.

The researches of the brilliant Italian toxicologist were soon confirmed from all quarters, and the ptomaines have to-day a place in forensic medicine which bids fair to upset all pre-existing methods of investigation.

Liebermann separated from a decaying stomach, during a toxicological analysis, a base which possessed properties of coniine, but proved totally inert physiologically.

During the case of Brandes-Krebs, tried before the assizes of Brunswick in 1884, there was discovered, besides arsenic, a coniine-like body, which corresponded in reaction both with coniine and nicotine, but differed in some reactions from both. It was very poisonous, 44 milligrammes killing a frog within a minute.

Another coniine-like base was isolated by Brouardel and Boutmy from the body of a woman, who, with others, had eaten of a stuffed goose. The same base could be obtained from the remnants of the goose. It gave the general alkaloidal reactions and others non-alkaloidal besides, and also acted as a poison on frogs. The same investigators also isolated from other dead bodies a veratrine-like body, which reduced potassium ferricyanide, and did not induce tetanic symptoms in frogs. They proposed as general reactions for the ptomaines the reduction of potassium ferricyanide, maintaining that none of the vegetable alkaloids aside of morphine possessed this property in a marked degree. Gautier and others showed, however, that it was also found with hyoscyamine, emetine, igasurine, colchinine, nicotine, and apomorphine, as well as ergotinine, aconitine, digitalin, eserine, and some of the other opium alkaloids. The poisonous properties of the ptomaines were proven by Moriggia and Battistina in 1875, and with it the value of the physiological experiment in their differentiation with vegetable alkaloids, which was urged by Ranke as being even more conclusive than chemical tests.

Selmi showed in 1876 that the duration of the decay had a marked influence on the production of the ptomaines, so that *different bodies are generated at different times, and that all of them are unstable.* In his celebrated monograph, "Sulle ptomaine od alcaloidi

cadaverici e loro importanza in tossilogia," Bologna, 1878, he maintains materially the Staas-Otto method for the separation of ptomaines, and classes them as follows, according to their extraction by ether: 1. Those from acid fluids; 2. Those from alkaline fluids; then, by their extraction with chloroform, from, 3. Acid fluids; 4. Alkaline fluids; 5. Those which are extracted by amylic alcohol; and, 6. Those remaining in the extracted masses. He further gives the principal reactions for the products of each of these classes, and dwells particularly upon the fluid coniine-like ptomaines. He compares with them the principal vegetable alkaloids which simulate them, showing that morphine and codeine, as well as atropine and delphinine, are particularly prone to such simulation by ptomaines.

His work on the recognition of and the differentiation between morphine and its simulating ptomaine has since become a matter of record. The results of his vast labors on the ptomaines, the study of which he made his life's work, Selmi comprised in a work entitled "Ptomaine od alcaloidi cadaverici e prodotti analoghi da certi malatti in correlazione colla medicina legale," Bologna, 1881. His researches on the products of decay of egg albumen demonstrated the development of several non-volatile basic substances, the hydrochlorides of which crystallized in colorless needles, and acted upon frogs like curare. They were also directed towards defining the conditions influencing the development of ptomaines, so that without access of air they were found to develop only ammonia, while under the influence of the atmosphere amines were formed. If these were treated with fixed alkalies there resulted bodies of an intense coniine odor.

While in Selmi we have no doubt lost the most energetic worker on the subject of ptomaines, others, contemporary with him and after him, added to our stock of knowledge in this direction. To-day their existence forms one of the formidable barriers to medico-legal proofs, and complicates the work of the toxicologist in the most embarrassing manner. Not alone that many of them have poisonous properties in themselves, but they are capable besides of forming poisonous compounds with inorganic poisons. To swear away a man's life under such circumstances is a grave responsibility indeed.

The importance of these substances in forensic medicine appears clearly from some of the here briefly alluded to references. While no doubt few of the alkaloids and ptomaines cannot be distinguished by corroborative chemical tests and physiological experiment, the danger is still possible that some alkaloid may be identical with a ptomaine. That animal bodies are not the only substances capable of producing ptomaines will become evident from the fact that they will form wherever proteids are subject to decay,—*i.e.*, exposed to the action and decomposing influence of micro-organisms. Thus, a crystalline poisonous ptomaine, termed sepsine, was isolated from decaying yeast by Bergmann and Schmiedeberg, while a body giving the color reaction of strychnine, but without bitter taste, was separated from putrescent corn-meal; and Poehl, as one of a commission of the Russian government to investigate the cause of epidemic ergotism, found ptomaines in large quantities in the ergotized flour.

But it is not to forensic medicine alone that a knowledge of the ptomaines is of such great importance. Their existence has opened up to the pathologist a vista which promises to solve the mysterious nature of infectious diseases. It may, indeed, be claimed that science moves in cycles, and that in our search for knowledge we return to the old and cast-away hypotheses, to view them with eyes fortified in a better manner. Humeropathology, long since passed away from modern medical science, seems to be recalled to us, though in an entirely new garb. The study of the physiological action of poisons proves beyond doubt that their toxic influence is proportionate with the chemical constitution of the intoxicant. The study of the nature and action of the microbes has forced more and more upon us the condition that their presence and mechanical irritation alone could in no way account for the different types of disease, and that they must manifest themselves rather by chemical effect than by simple physical traumatisms. Even by the most sceptic the presence of special types of micro-organisms in different diseases in countless numbers cannot be denied, while their absence in health is also established. The principal doubt seems to have been always as to their pathogenetic function. It is not to be denied that they are as such not pathogenetic, that they may exist in limited numbers or on unsuitable soil without producing disease. That they are organized individuals, depending for their life and propagation on chemical changes, none will or can dispute. Organized individuals require for their natural life food, and the foods differ in the plants

and animals almost as much as do the characters of their different species. The food is not merely consumed as such and ejected, but the vital phenomena are but the results of the chemical changes they undergo in the consumer, the heat units stored up therein being definitely reproduced either in mechanical action, heat radiation, or in reproduction and other vital functions. While in the micro-organism we can scarcely claim for this correlated force production many of the familiar vital phenomena, their rapid reproduction certainly shows that their food consumed is not an unimportant matter. While only a limited portion, however, is utilized in the reproduction of force, the greater portion of the molecule broken up by them, now disassociated, seeks other relations, and furnishes new products which are foreign to the animal organism.

Given the presence of the micro-organism and the disease proportionate in its intensity to the numerical strength of the former, together with an array of symptoms not to be explained by simple mechanical irritation only, what is left to account for the typical character of disease? While this may be said to be arguing for the presence of pathogenetic matter by exclusion, it is by no means intended as proof, which the chemical pathologist of the present has already furnished in some instances, and will, no doubt, further furnish in the near future. The late Austin Flint foresaw this when he intrusted the future of medicine to chemistry, and daily the evidence is accumulating that infectious diseases are but specific intoxications with products resulting from special micro-organisms.

The study of the ptomaines, not as carriers of, but as specific intoxicants during, disease, is one, therefore, that offers a wide field of action for chemical pathology. As chemistry is a concise science, the mere reactions of complex bodies, such as we have referred to under the forensic part of this paper, will hardly suffice, and their ultimate composition alone with the atomic arrangement of their molecule is what the chemists will have to prove before we can hope to throw light on the changes they exert on the normal vital process.

Although many of the previously-mentioned investigators had isolated crystallizable and crystallized ptomaines, these were not in sufficient quantities to admit of their elementary analysis. Many of the others were even complex bodies, which owed some of their characteristic reactions to admixed products.

To Nencki, of Berne, we owe the first knowledge of the composition of a chemically pure ptomaine, the "collidine," $C_8H_{17}N$, a homologue of the pyridines, which he obtained as a double platinum salt, while subsequently Gautier and Etard prepared from decaying mackerels the ptomaine "parvoline" of the chemical composition $C_9H_{13}N$, another homologue of the pyridine group.

Brieger, of Berlin, took up the study of the ptomaines with great energy, and we owe to him and the analytical chemists he surrounded himself with much of our present chemical knowledge on this subject. His researches were first directed to the aromatic products of the decomposition of egg albumen, with special inquiry into the elements of their formation. These consist—1. In the nature of the ferment; 2. The manner in which albumen is offered to putrescence; 3. The temperature influencing it; and, 4. The part oxygen takes in the process. The production of phenol, cressol, indol, and skatol, and their derivatives resulted from these researches, which were confirmed again by himself and Baumann. E. and H. Salkowski further proved the formation of aromatic acids during putrescence, while Schmiedeberg and Harnack showed that neurine by oxidation may be converted into the poisonous muscarine. Brieger proved that peptones and peptotoxin were identical with many of the poisonous bases of albuminoid decay. To enumerate here the various researches of Brieger would lead us too far into the domain of physiological chemistry and from the object of this paper. Let me condense his results, especially of the cadaver ptomaines, in his own words, that "during the various stages of decay of the human cadavers and their parts, different basic products are formed; many ptomaines disappear during the process and others form in their place, and, as in the beginning, certain bases are quite rare, with the partial disappearance of others the first formed reappear in a greater degree." With cessation of life in the animal body, the complex lecithin is broken up into its constituents, of which cholin is the most marked. Within about the third day a diamine, termed by Brieger "neuridine," appears; after about seven days cholin disappears, and with its disappearance markedly toxic ptomaines develop. Another diamine, similar to neuridine, of the formula $C_5H_{16}N_2$, was found, and termed cadaverine, and appeared more plentiful the longer putrescence had lasted. A third diamine, at a still more protracted putrescence,

was found by Brieger to have the formula $C_4H_{12}N_2$, and termed putrescine. Still a fourth diamine, a polymere of neuridine, he termed saprine, all of which, however, proved without toxic action. Of the only two poisonous bases that Brieger could separate from the human cadaver the one producing toxic properties in the most marked degree he terms mydaeline, which produced mydriasis and death in small animals. While thus many of the cadaveric bases of Brieger's are principally diamines, and not related to the pyridine series of alkaloids, they appear to belong to the ethylenes, and do not correspond to the reduction test of potassium ferricyanide, proposed as a general reagent for all ptomaines by Brouardel and Boutmy. Thus, no group reagent for cadaveric bases exists, although it is maintained that while alkaloids are optically active, the ptomaines are optically inactive. Still, as they are obtained in such small quantities, this property, were it even proven to belong to the ptomaines as a class, could be hardly available. To obtain a ptomaine for forensic practice it would from the preceding appear necessary to prepare it absolutely pure, and compare its chemical composition with the supposed alkaloid. For the detection of pathological ptomaines it is proposed to obtain from the body the characteristic microbe, and from artificial cultures study its product. If the theory that pathological ptomaines are of an excretive nature were true, the results would have to be correct, but if the ferments, according to chemical theory, are agents of hydration only and splitting up of the molecule, there can certainly be no comparison between that of artificial culture-fluid and that of the albuminoids of the body. Still, if the ptomaines correspond in physiological action to the clinical picture of the disease they may be inferentially accepted as identical.

A ptomaine of cholera was isolated in 1885 by Villiers; it was principally found in the intestines, and in traces in the kidneys, but not in the heart or liver. It had an odor of trimethylamine, was volatile, and had a biting taste. It answered the usual ptomaine reaction, and acted on animals by creating nervous tremor, and in making the cardiac beat intermittent. He also separated from the organs of a child dead from pneumonia a volatile, acrid-smelling ptomaine, differing in its physiological action and by its reactions from the cholera ptomaine, and with feeble basic properties. This base he considered identical with the ptomaine from a child which had died of diphtheria.

Armand Gautier is also one of the prominent investigators on this subject. He objects to the Dragendorf method for their separation, and also to that of Pouchet by precipitation with tannin. He defends their structure as true alkaloids against Casali, and gives parvoline, already mentioned, and hydrocollidine, $C_8H_{13}N$. Both these bases are fluid, and from the mother-liquor, after precipitation with platinum chloride, another volatile base of the odor of elder-flowers is obtained. He describes the ether, chloroform, and amylic alcohol extracts of cadavers, and states that they act similar to muscarine, while the hydrocollidine killed a bird in an hour, with accompanying muscular paralysis. He describes as leucomaines the bases derived from the normal tissues of living animals which are derivates of kreatin, kreatinin, and xanthin. Gautier infers from his experiments, that from the similarity of ptomaines and leucomaines, the tissue-metamorphosis of the body is similar to ærobic and anærobic micro-organisms; that the excretion of injurious products is partly effected by *mechanical* means and partly by *oxidation*. This important function of oxygen is, as he agrees with Bouchard, of special value in pathological conditions, when the products of tissue-metamorphosis accumulate in the system. Gautier further argues that, as the poisonous nitrogenized extractives of the urine possess no basic properties, the injurious products within the body are not alkaloids.

In contradistinction to the just quoted celebrated author, Brieger, in his third publication on the ptomaines (Berlin, 1886, Hirschwald), lays particular stress on the chemical action of the micro-organisms, and states that their valuable work in nature's workshop is not sufficiently appreciated. For the poisonous ptomaines he proposes the affix toxines. Besides cadaverine and putrescine, he separated from decaying horseflesh a poisonous amido-acid, $C_7H_{17}NO_2$, also mydatoxine, $C_6H_{13}NO_2$, which produced symptoms like curare. He also isolated mydine, $C_8H_{11}NO$, and methylguanidine, $C_2H_7N_3$. He made special investigations on the ptomaines of pure cultures of pathogenetic bacteria. Thus, he found that the staphylococcus pyogenes aureus, Rosenbach, apparently produces no poisonous ptomaine and only salts of ammonium; that neither normal flesh parts, nor xanthin or kreatin, were attacked by it or the streptococcus pyogenes, Rosenbach, which produced, besides ammonium chloride, principally trimethylamine. From the cultures of the Koch-Eberth ty-

phoid bacillus on meat pulp, he obtained the basic typhotoxine, $C_7H_{17}NO_2$, which induced in small animals lethargic conditions, with liquid dejecta. This bacillus, while easily decomposing the carbohydrates, does not affect glycogen. Cultures with tetanus ferment, though not sufficiently purified, developed in a hydrogen atmosphere a base of the composition of $C_{13}H_{30}N_2O_4$, which physiologically produced the same symptoms as had been before obtained with the cultures.

I have myself, at the instance of Dr. Shakespeare, extracted from the brain of a mule which had died of tetanus a basic substance by the Staas-Otto method, which possessed tetanizing properties.

I cannot close my account of pathological ptomaines without referring to the one discovered in this country by Vaughan, of Michigan. To this he gave the name of tyrotoxicon, from its origin from putrid cheese. This, while developed at first principally to clear up the frequent poisoning from dairy products, was by its discoverer inferentially declared to be the pathological ptomaine of cholera infantum. While as yet the proofs to this end are not conclusive, the proofs by analogy offered by Vaughan, together with the clinical experience in such cases, leave no doubt that tyrotoxicon is really the ptomaine producing the symptoms of that disease. In his interesting paper, read before the Section of State Medicine at the thirty-eighth annual meeting of the American Medical Association, the author proved beyond much doubt the identity of tyrotoxicon with diazobenzol, $C_6H_5N_2C_4H_7O_2$, both by chemical as well as physiological tests. The important bearing of this discovery on the milk-feeding of infants during our heated term is, indeed, a great one, and has already borne fruitful results.

As an agent that has caused frequent forensic investigations, tyrotoxicon has cleared up many mysterious poisoning cases that were formerly attributed to wilful admixtures. I have had several opportunities of verifying its presence where charges of poisoning by arsenic had been made. The same may be said of other ptomaines which were the poisonous elements in chicken and lobster salads, canned meats and fish, as well as sausages, when wholesale poisoning was promptly attributed to other agents admixed to the viands.

Before concluding this account of the ptomaines, which, though extended, is still too brief to do justice to the subject, I would give a short *résumé* of that which I have presented to you, with inferences as have occurred to me during their study.

That there are poisonous products developed during the decay of albuminoids is undeniable. That decay depends upon the chemical agency of micro-organisms is probably now a scientific fact, only doubted by those who are irreconcilable to scientific advance. That these products of decay bear a strong resemblance in their effect on the living body to the alkaloidal substances of vegetable origin is also well confirmed, though chemically no similarity appears to exist. That they are transient in their origin would point to their instability as chemical compounds.

When reasoning with these points as basis, the conviction forces itself upon us that the chemistry of the ptomaines is one of great complexity,—*i.e.*, that they cannot as a whole be classed with a group or series, and even the ingenious researches of the ablest investigators have not succeeded in elucidating it sufficiently; also that even great care and skill will not always prevent chemical new formations during their isolation; and again, the processes employed for their purification and isolation in a pure state appear to show a tendency to reduce their complex molecule to simpler forms. The chemical process alone without physiological experiment is not always reliable in demonstrating their nature or character. Their development from dissimilar soils cannot, in my opinion, be accepted as the specific products of the bacterium from the living albuminoid molecule. The fact that basic substances are not found in the urine, as is the case with vegetable alkaloids, seems to me no argument either against their existence in the blood or for their destruction by oxidation in the body. The majority, if not all, the ptomaines are in their basic state volatile substances. From the alkaline liquids of the body they would thus most likely find their elimination rather through the respiratory organs than the skin or kidneys. The poisonous properties of the ammoniacal compounds of the body in the pulmonary exhalations are well known, and, in my opinion, the pathological ptomaines find their exit from the circulation by the lungs, which I hope to be able to prove in the near future from experiments which I am conducting at this present time.

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Leading Articles.

IODOFORM AND IODOL.

THE good effects which have followed the surgical use of iodoform have led to a series of investigations of its influence upon the lower organisms with results that are apparently at variance with previous surgical teachings. The matter is one of such importance that, although we have noted from time to time these researches in the THERAPEUTIC GAZETTE, it has seemed to us that a leader on the present state of the subject would not be amiss. In November, 1886, Dr. De Ruyter announced at a meeting of the Berlin Surgical Society that the powder of iodoform has little or no effect in preventing the development of bacteria, and that when it is mixed with rapidly-infective bacteria, like those of anthrax and of various forms of animal bacteria previous to inoculation, it does not sensibly influence the development of the disease. This has been confirmed experimentally by Kronacher (*Münchener Med. Wochen.*, vol. xxxiv., 1887, p. 546), who employed the bacteria of erysipelas and of anthrax; also by Baumgarten (*Berlin. Klin. Wochen.*), who further found that iodoform powder mixed with tubercular bacillus in cultivating apparatus did not prevent its ordinary development, and that the bacillus mixed with iodoform powder, introduced into guinea-pigs and rabbits, produced rapid tuberculosis; also by Dr. Lübbert (*Fortschritte der Med.*, Bd. 5, 343) with Staphylococcus pyogenes; also by Drs. Chreyn and Thorkil Drovsing (*Fortschritte der Med.*, Bd. 5, p. 33), who found that the iodoform had no influence upon the development of Staphylococcus pyogenes, or upon the coccus of pneumonia, or upon the bacillus subtilus and other organisms, and conclude that it is not only worthless as an antiseptic, but may even be the means by which the septic organisms may be carried into the system; also by Dr. Johan-Olsen (*Norsk Magazin Legevidensk.*, 1886), with various bacterial organisms; also by Könige (*Therap. Monatshefte*, April, 1887). On the other hand, Dr. H. Sattler (*Forschritte der Med.*, Bd. 5, 362), in his experiments, found that when he impregnated threads with iodoform and micro-organisms, and then placed them in a culture-apparatus, the iodoform had a very distinct effect in checking the development of the bacteria, and De Ruyter states that if, instead of using the iodoform powder, he employed an ethereal solution of iodoform in which decomposition of the iodoform had already commenced, there was a distinct effect upon the organisms. In a further series of experiments De Ruyter showed that iodoform is decomposed by blood, serum, and other organic fluids in which micro-organisms are growing, and apparently established that the decomposition is produced by the ptomaines developed by the growing organism.

A curious fact made out by Baumgarten is, that rubbing the bacillus of anthrax with any hard powder, apparently mechanically, kills the organism.

The clinical results achieved by surgeons are concordant and decided as to the practical value of iodoform in the treatment of wounds and ulcers. It is possible that a part of the good influence of the iodoform is due to a specific effect upon the tissues themselves. Further, the powder of iodoform may have a very distinctly protecting power mechanically, and by the dryness of the wound which it causes, the discharges from the wound being the especial soil in which the bacteria develop. In certain cases, especially in tubercular diseases, iodoform appears, however, to exert an influence greater than can be accounted for by an indirect action. Many clinicians bear strong testimony to the effect

of iodoform on tubercular ulcers of the larynx and other organs. Professor Bruns (*Therap. Monatshefte*, May, 1887) relates fifty-four cases of cold tubercular abscess treated by evacuation through aspiration and a subsequent injection of a ten per cent. mixture of iodoform, glycerin, and alcohol, with closure of the orifice, made by the needle, by means of the iodoform collodion. Of fifty-four such cases, forty were healed, many of them as the result of a single injection. For the purposes of study some of the abscesses were opened, and tubercular bacilli were found abundant in their walls. According to Professor Bruns, the first change which results from the iodoform is the disappearance of the tubercular bacilli and the appearance of normal granular tissues. In De Ruyter's experiments, already quoted, the products of the decomposition of iodoform distinctly checked the growth of organisms, and it is at present most probable that some of the goodly results achieved by iodoform as a topical application are the result of the long-continued antiseptic influence of the iodine compounds liberated by its decomposition.

A great objection to iodoform, especially in private practice, is the odor, for the prevention of which a number of suggestions have been made; none of them, however, of any real value. The use of iodoform in venereal diseases has become so common that the public now associate it with this class of diseases almost as closely as they do oil of copaiba and mercurials, and patients sometimes refuse to have iodoform about their persons for fear of creating suspicion as to the nature of their complaint. Further, the number of cases of poisoning by the absorption of iodoform from surgical dressings is really quite large, so that a substitute is a great desideratum. It at present looks as though such a substance may be found in iodol, although at present its cost greatly restricts its use. It is free from odor, has similar physiological properties to iodoform, and yields by its slow decomposition the same products as does iodoform. It has been asserted to be entirely free from toxic influences. If this were true it would not fully represent iodoform, but the experiments made by Marcus and by Pahl (Inaug. Diss., Berlin, 1886) show that when given in sufficient doses to animals it causes emaciation, albuminous urine, fall of temperature, general loss of muscular power, and, finally, death from fatty degeneration of the liver, kidney, and other tissues. Moreover, in a case which has already been published in the GAZETTE (see vol. xi. page 768), iodol caused, when used as a surgical dressing, symptoms of severe poisoning. The symptoms and post-mortem results which it produces are precisely those produced by iodol. As long ago as 1886, Pick asserted that it is absorbed much less freely than is iodoform, and this has been confirmed by the experiments of Seifert, who found that when he took 7½ grains of iodol, iodine did not appear in the urine until after twelve hours, and did not reach its maximum elimination for eighteen hours. It would seem, therefore, that iodol is less poisonous than iodoform simply because it is much less freely absorbed. It contains nearly as much iodine as does iodoform, one hundred parts of it containing eighty-eight and nine-tenths parts of the haloid, and one hundred parts iodoform ninety-six and seven-tenths parts; its local effect is as active as that of iodoform, and it has been employed for all the purposes for which iodoform has been used, and found especially efficient in the treatment of tubercular laryngitis. Thus, Lublinski (*Deutsch. Med. Wochen.*, 51, 1886) had a number of cases of tubercular laryngitis in which throwing pure iodol into the larynx either daily or weekly produced the most favorable results, without causing irritation. He also used it in ozæna with similar good results. Dr. Otto Seifert (*Münchner Med. Wochen.*, 1887, p. 53) states that he had many times seen symptoms of marked constitutional disturbance follow the local use of iodoform in tuberculosis of the larynx, but has never yet seen any local or constitutional trouble with iodol, and in one case, in which he was able to make a prolonged treatment, he obtained first a definite cure of a tubercular ulceration on the right vocal cord through the employment of creasote-glycerin and iodoform and boracic acid, and then a complete healing of the left vocal cord by iodol blown into the larynx. In cases of rhinitis atrophicans patients were improved, but not cured. The absence of odor and the non-irritating property of iodol fit it especially for use in these cases. The action of iodol in tubercular laryngitis has also received the very strongest commendation from Dr. R. Norris Wolfenden, who prepares a pastille from one grain of iodol, one minim of glycerin, and eighteen grains of glyco-gelatin. Mazzoni, who first proposed the use of iodol in practical medicine, employed a solution composed of iodol, one part; alcohol, sixteen parts; and glycerin, thirty-four parts. One drachm of iodol forms with one ounce of ether a clear brown solution, which may be applied by the spray or brush to nasal or

other mucous membranes or to the surfaces of ulcers, and soon evaporates, leaving behind a coating of the iodol. Iodol has also been used in internal medicine. Its effects in tertiary syphilis have been stated by Assaky to be most extraordinary. The dose usually employed has been 2 or 3 grains a day, but both Pick and Assaky have given as high as 30 grains a day without injury.

THE PREPARATION OF FOOD FOR THE SICK.

THE preparation of food for the sick is a matter of such importance that, although the subject is trite, we scarcely think an apology is necessary for devoting a leader in this early number of 1888 to the discussion of the preparation of soups.

In making a beef-tea the round of a good piece of beef should always be selected, and cut into small cubes not larger than half an inch in diameter. It should then be put to soak for two hours on the back of the range, in an earthen-ware pipkin, with one pint of cold water, and allowed to simmer for about fifteen minutes and boil for three minutes. After adding half a teaspoonful of salt and a little pepper, the tea is ready for use.

In the preparation of soups the first thing is the making of the so-called stock or basis for the soup. There are two distinct stocks: one which may be known as the brown stock, the other as clear, or *consommé*, stock. For the preparation of brown stock take four pounds of shin of beef, four quarts of cold water, ten whole cloves, four pepper-corns, a bouquet of herbs (sweet marjoram, summer savory, thyme, and sage), one tablespoonful of salt, three small onions, one turnip, one carrot, two stalks of celery, two sprigs of parsley. Cut the meat from the bones, after which place the bones and half of the meat in a soup-kettle and allow to stand for half an hour in cold water. Heat gradually and allow to simmer for six or seven hours. Brown the remainder of the meat in two tablespoonfuls of beef-drippings and add with the other meat and with the vegetables chopped fine, when the kettle is put on the fire to simmer. After it has simmered the required time the stock is strained and set aside to cool, the fat being removed from the top. The stock is then ready for use.

Out of the brown stock may be made St. Julienne soup by the following process. In making these soups the stocks must never be allowed to boil, or at most must be brought only for a moment to the boiling-point. For St. Julienne put one pint of the brown stock on the fire to heat, after which a pint of finely-chopped vegetables (turnip, carrot, etc.), with half a teaspoonful of salt, should be put on with a little water to parboil. This being done, add the vegetables to the stock, season with half a saltspoonful of pepper. Vermicelli soup is made by adding half a cup of vermicelli to a pint of the brown stock. Cook the vermicelli for ten minutes in salted boiling water, season with a half-teaspoonful of salt and a half-saltspoonful of pepper, and add to the warm stock.

Consommé stock is to be made in exactly the same way as the brown stock, except that three pounds of the knuckle of veal are to be added to the meat and all the meat is to be put in at once without browning. After the stock has been formed, in order to clear it add the white and the shell of one egg, the juice and rind of one lemon, beating them all up together; then put on the fire, bring to the boiling-point, strain through a sieve and again through a napkin, without pressure or squeezing, and serve.

For making chicken-broth, take three pounds of chicken well cleaned, cover with cold water, boil from three to five hours (until the meat falls to pieces), strain, cool, and skim off the fat. To a pint of this add salt and pepper and two tablespoonfuls of soft rice, which has been previously thoroughly boiled in salt-water; bring the broth to a boil. In preparing the rice half a cupful should be boiled for thirty minutes, with a teaspoonful of salt in a pint of water. To make mutton-broth, take one pound of lean, juicy mutton, chopped fine.

THE "LOCO DISEASE."

WE have previously from time to time in the columns of this journal alluded to the affection seen among Western horses and cattle, and known as the loco or crazy disease, which is asserted by many ranchmen to be produced by one of two plants, *Astragalus mollisimus* and *Oxytropis Lamberti*. The matter has been recently investigated to some extent by Professor Sayre, of the Pharmaceutical Department of Kansas State University. Unfortunately, the research throws

very little light upon the matter, although Professor Sayre took the trouble to make a long tour down into the Indian Territory in connection with the subject. Analysis of the two plants by Professor Sayre failed to detect in them any alkaloid or any poisonous principle, and the question remains unanswered whether these plants really are or not the cause of the symptoms. When it is known that in Meade County, Kansas, during five years five hundred horses and cattle are said to have died from eating this weed, it is most extraordinary that its poisonous or non-poisonous effects are not determined. The State of Kansas should appoint a commission and supply them with brains and money, and the thing could be settled in a few weeks. Experiments made in the laboratory of the University of Pennsylvania with a small supply of the plants received from the West proved that this extract had no poisonous effects upon dogs, rabbits, or cats. What is now wanted is to take three or four old horses or cattle, stable them in the vicinity where the plant is abundant, and feed them upon the plant. If necessary, starve them until they are hungry enough to eat it, and then see if the loco symptoms are developed. As it was shown in the papers by Drs. Wood, Reichert, and Hare on fever, it is entirely possible that this plant is not, strictly speaking, poisonous, and yet that it should produce the loco disease. The experiments which are said by Professor Sayre to be made by Dr. P. Harding, of Dodge City, a veterinary surgeon, are the only ones to the point that have been made, and seem to indicate that the loco disease is produced by the plant. They are faulty, however, in that the animals employed already had the affection before the weeds were given to them. We quote the statements of Professor Sayre in regard to these facts as follows (*Trans. of the Kansas Acad. of Sci.*): "In order to satisfy himself he performed two experiments upon horses with the weed; the first experiment being in the field and the next in the barn. In the field he pastured two horses, both horses having a taste for loco. One of the horses found abundance of the plant in his pasture; the other horse found none, because it had been carefully removed from his portion of the field. The first horse died in the pasture; the second recovered from the previous feeding. In the barn he also placed two horses similarly affected, and fed one with dried loco and the other with clean hay. The first died and the other recovered."

SOZOIODOL.

STRANGE as it may seem, sozoiodol is not a new hypnotic, or even a new antipyretic, but is a compound of iodine, phenol, and sulphur, which was employed some years ago by Professor Wagner, of San Francisco, in the treatment of various skin-diseases, but which on account of its irritating properties had to be abandoned. Recently, however, it has been manufactured in a perfectly pure condition, and appears on the market in the form of pure white crystals, entirely free from any irritating power to the skin, and from the fact of its being composed of a combination of three most active antiparasiticides would naturally attract the attention of dermatologists. Containing forty-two per cent. of iodine, its formula may be written as follows:

$$C_6H_3ISO_3H(OH)$$

or

$$C_6H_3\begin{cases} OH \\ SO_3H \\ I. \end{cases}$$

The strict name, therefore, of this compound is para-iodophenol-sulphonic acid. It is soluble in water and alcohol, free from odor, and, unlike other iodine preparations, not decomposed by light. Sozoiodol has been subjected to a certain amount of study in Dr. Oscar Lassar's clinic in Berlin, and the results published in the *Therapeutische Monatshefte* for November, 1887. His experiments taught that, whether in the form of salves or powders, this preparation was well borne both by the healthy and diseased skin. Although the time lapsing since the commencement of these experiments has been insufficient to warrant positive conclusions, the future of sozoiodol would seem to be a promising one. It may be employed either alone or in combination with various other preparations, such as zinc, starch, vaseline, or lanoline, and when applied to the inflamed or irritated skin leads to mild desquamation without inflammatory reaction. It has likewise been employed on fresh wounds as well as on more or less chronic forms of different varieties of exæmia, herpes squamosus, herpes tonsurans, impetigo, and other affections. The ten per cent. salve has been found to be efficacious in parasitic hair-diseases, while a five per cent. dressing was employed with success in varicose leg-ulcers. It is to be hoped that this substance will reach the American market, and be subjected to the careful testing which it would appear to deserve.

THE GREEN DIARRHŒA OF CHILDREN.

ANOTHER alleged triumph of the microbe is brought to light through the researches of M. Hayem and his assistant, Lesage, who affirm that this industrious creature is the cause of the green stools of children. These investigators assert that for the first twenty to twenty-five days after birth diarrhœa occurring in children is apt to be bilious in nature, but such a form of diarrhœa becomes more and more rare up to the age of six months. After this time, if the discharges are examined in cases of green diarrhœa, an innumerable number of pathogenic bacilli will be found, to such an extent that to their presence is due the peculiar mucous character of these stools; while the coloration is due not to the bile-pigments, which are entirely absent, but to a peculiar pigment secreted by the bacilli themselves, and which may be reproduced in artificial cultivations of the microbes. It would, therefore, seem clear that because the passages in a case of diarrhœa are green it is not warrantable to speak of them as bilious, since in many cases bile-pigments will be entirely wanting in cases of green diarrhœa. Further than this, it would seem that this form of specific diarrhœa is contagious, and may be produced in different animals by the induction of the bacilli through various means. While it is claimed, however, that there is a certain amount of probability in the contagion of the disease, of course it does not imply that dyspeptic troubles are without influence on the development of this form of diarrhœa, since it is readily conceivable that indigestion, by preparing the soil, may favor the production of this bacillus. Hayem and Lesage have found the greatest success in the treatment of this form of diarrhœa by the administration of a two per cent. solution of lactic acid in teaspoonful doses. Of course, in this form, as in other forms, of diarrhœa, the diet must be regulated. Care must be taken to employ disinfection of the stools to prevent the spread of the affection, and by proper care it is claimed by these means the mortality of this microbic form of diarrhœa may be reduced to a minimum.

"INDEX MEDICUS."

THERE is no profession in which the spirit of research and of literary activity is as strong as it is in the medical profession. Indeed, according to our thinking it would be better for the profession if its activity was somewhat checked; at least it would be much easier for those of us whose position requires that they should keep ahead or abreast of the ever on-coming tidal wave. Some little time since we made a careful estimate by going over a volume of the "Index Medicus," and found that in round numbers about fifteen thousand doctors had written books and articles on medical subjects in the year. These doctors probably averaged three articles apiece, and if unsigned and uncatalogued editorials, etc., are counted in, probably not much less than fifty thousand articles were cast adrift upon the waters of medical publication in 1885. It is a fair estimate that one out of thirty of these articles was worth reading by a serious man, and the labor of hunting out the good pieces of timber in the vast mass of drifting wood is certainly gigantic. Indeed, it would be impossible to do the thing satisfactorily at all were it not for such publications as the "Index Medicus." Of all keys of current medical literature that have been published since the world was, on this or on any other planet, the "Index Medicus" is the most complete and the most satisfactory. To the literary doctor who has once used it, it has become as necessary as the morning cup of coffee or the evening meal, without which life is a burden and effort a despair. The number of student physicians in any place can be fairly judged by the number of subscribers to the "Index Medicus." As a matter of curiosity we append the following list of paying subscribers in and out of the United States:

MEMORANDUM SHOWING THE NUMBER OF PAYING SUBSCRIBERS TO THE "INDEX MEDICUS."

United States.

California	3
Connecticut	3
District of Columbia	14
Georgia	2
Illinois	8
Indiana	1
Louisiana	2
Maine	3
Maryland	13
Massachusetts	34
Michigan	7
Minnesota	2
Missouri	5
Nebraska	1
New Jersey	5
New York	78
Ohio	6
Pennsylvania	39
Rhode Island	7
South Carolina	2
Vermont	1
Virginia	2
Wisconsin	2
	240

Foreign.

Argentine Republic	1
Australia	2
Belgium	1
Canada	1
Denmark	1
England	41
France	18
Germany	33
Holland	1
Ireland	2
Italy	1
Japan	1
Peru	1
Russia	5
Scotland	9
Switzerland	4
Turkey	1
	123
Total, United States and Foreign	363

In addition to these, 100 copies are taken for the Surgeon-General's Library at special rate, making 463 total.

In the home list it is curious to remark that New York has twice as many subscribers as Pennsylvania, and that in Massachusetts, Maryland, and the District of Columbia a reading physician does not seem to be a very scarce animal. In the great State of Illinois, with the fermenting mass of commercial activity like Chicago, but eight doctors have had pride enough in their country's publication, interest enough in medical science, or a love of reading sufficient to warrant their spending ten dollars a year in sustaining the most illustrious medical publication in the United States, and nurturing their own souls and bodies by medical culture. Worse than this, a rich State like Kentucky, with cities as large as Louisville, does not even seem to require one copy of the publication.

The receipts from the "Index Medicus" to the publisher are not nearly enough to cover the cost of so extensive a publication. Mr. Davis deserves the very warmest thanks of the profession, but how long he will continue to carry this burden we do not know. It is most extraordinary that he does not in this matter receive better backing. The thanks of the profession are good, but the thanks which do not express themselves in bank-notes are only an exemplification of the old proverb, "Soft words butter no parsnips."

GLEDITSCHINE.

IN a paper read November 23, 1887, before the Philadelphia County Medical Society, Dr. Edward Jackson, after discussing the alleged fraud concerning gleditschine, and the discovery of an alkaloid in the plant *Gleditschia triancanthos* in 1878 by Dr. B. F. Lautenbach, said that he had put in the hands of Mr. James Kyner about a peck of the fruit of the plant. Following the method of Lautenbach, Mr. Kyner finally got out a very small amount of a solution of what was believed to be the sulphate of the true gleditschine. Of this Dr. Jackson says, "On evaporation it deposits crystals of a narrow rhombic form. When ammonia is added it gives a precipitate, which presently crystallizes in broader rhombs. On the frog it produced the symptoms narrated by Dr. Lautenbach, though the supply of the solution gave out before the stupor was complete. The symptoms reached their height in fifteen minutes after the hypodermic injection of the solution, were passing off in an hour, and had disappeared entirely in less than three hours. *This solution freely applied to the conjunctiva produced no anæsthesia, or dilatation of the pupil, whatever.*"

Reports on Therapeutic Progress.

THE VALUE OF COCAINE IN OBSTETRICS.

Cocaine is now so generally used locally as an anæsthetic that it seems rapidly assuming the rôle of a universal panacea for all pain. This indiscriminate use cannot, however, be too much deprecated, more especially in obstetrics, and it seems most desirable that certain rules for its administration should be laid down. Statistics of any value on this subject are scanty. MR. JOHN PHILLIPS, however, publishes in the *Lancet* for November 26, 1887, an analysis of the more important contributions to this subject, of which the following represents his more important conclusions. The action of cocaine may be considered under five heads: first, the vomiting of pregnancy; second, during the dilated stage of labor; third, through the expulsive stage of labor; fourth, in necessary obstetric operations, be they ante-partum, intra-partum, or post-partum; fifth, sore nipples.

1. *The Vomiting of Pregnancy.*—Weiss appears to have been the first to call attention to the drug for this object, and gave it as a last resource, but with entire success. He administered it as the hydrochlorate in doses of $\frac{1}{16}$ of a grain, by mouth, every half-hour. Fraipont reports several successful cases; he prefers to administer it by subcutaneous injection of twenty minims of a four per cent. solution into the epigastrium. Engelmann relates a most obstinate case, where morphine,

cauterization of the os uteri, and injection into the rectum of CO_2, had all been tried without avail. He gave 10 minims of a ten per cent. solution thrice daily by mouth, with entire recovery in two days. Bois relates the case of a young multipara who was brought to a moribund condition by pregnancy vomiting; she had arrived at the fourth month. He made a pomade of cocaine hydrochlorate and vaseline (1 in 50), and placed a piece the size of a filbert against the os uteri: a fresh application was made night and morning. Amelioration of her symptoms soon began, and at the end of three weeks recovery was complete.

Here, then, we have cocaine administered in every variety and with evident success. The writer's experience amounts to two cases. In Case I., a nervous primipara at her seventh month, vomiting occurred after every meal, and she was induced to lie upon the couch all day, but unfortunately with no good effect. After trying the usual remedies, bismuth, soda, and ingluvin, he prescribed cocaine as follows: Cocain. hydrochlor., $\frac{1}{10}$ grain; tinct. aurantii, xm; mist. chloroformi, ss℥; aquam ad i℥; every three hours. There was a peculiar numb sensation about the tongue and fauces after each dose, but the effect upon the stomach was remarkable. The vomiting gradually ceased, and in three days she was able to take soup and milk-puddings, and in a week became quite well, and went to the termination of her pregnancy without further return of her trouble. In Case II. the result was more in doubt. Vomiting was general all day, the patient being at the end of the fourth month. The drug was administered as before and was taken continuously for a fortnight. The vomiting gradually ceased and never returned. Of course here it might have stopped in consequence of the natural progress of pregnancy.

2. *During the Early Stages of Labor.*—Mr. Phillips brings forward four cases of this kind, three being successes and one an absolute failure. The first case, A. B., a primipara, aged 18 years, had been in labor six hours when he saw her. The os uteri just admitted the tip of the examining finger, and no thinning of the lips had as yet occurred. The pains were most severe; she was throwing herself about and crying continually. One of Head Moore's cones was inserted immediately after a pain; it was almost entirely dissolved in nine minutes. The effect was at once apparent, the pains coming more regularly even than before; but between them the patient gradually dozed off and cried out no more. The effect of the drug was kept up for four hours, at the end of which time the os uteri was thinned out and dilated fully. Labor terminated naturally. The next two cases were counterparts of the foregoing, but the last, for some unexplained reason, was entirely unrelieved. In order to understand the effect of the drug, we must try and analyze the early pains of labor. Two agents unite to produce them: 1. The pain of uterine contraction,—similar, indeed, to any other organ consisting of smooth muscular fibre, endeavoring to expel its contents. 2. The pain resulting from the stretching of the nerves of the cervix and the lacerations of the cervical tissue (more or less slight) which doubtless occur. Over the first cocaine has absolutely no control, and its beneficent effect in this stage is due to its mitigation of the second kind. Doleris and Dubois painted the uterine neck through a speculum with a four per cent. solution of glycerin and hydrochlorate of cocaine. They experimented in eight cases, and in six the result was decidedly affirmative. Jeannel relates six cases, and in five of them (three of which were successful, and which he gives in full) he applied cotton-wool tampons soaked in a five per cent. solution to the cervix and posterior vaginal cul-de-sac. In the first case he cautions us against the use of bichloride of mercury with cocaine, as he found the former decomposes alkaloids with great rapidity. In three successful cases by Fischel a two per cent. solution was applied to the cervix on a tampon, and repeated every twenty minutes. In two others, however, a similar application of a four per cent. and then a two and a half per cent. solution produced a negative result. The method adopted by Hartzhorne is to introduce through a female glass syringe, as high up as possible behind the cervix, the following mixture: cocaine, 6 parts; glycerin, 20; and vaseline, 24.

And now to the best mode of application of the drug. Mr. Phillips ventures to differ with those who use the speculum. The objections appear to be (1) the exposure necessary; (2) the idea which must imbue the patient that some operation is about to be performed, in spite of all assurances to the contrary; (3) the removal of the vaginal discharge necessary before the application of the drug, which would be detrimental to the course of the labor; (4) a very large number of hyperæsthetic primiparæ can scarcely bear an ordinary vaginal examination, much less

the introduction of a speculum, and these are the very cases in which cocaine is of so much value.

3. *During the Expulsive Stage of Labor.*—Here the factors causing the pain are much more numerous. We have (1) the deeply-seated pain from compression of the large nerve-trunks; (2) the pain of the stretching of the perineum and vulva, which is most excruciating; (3) the pain from compression of the mucous membrane against the pelvic bones; and (4) the pain of true uterine contraction. It is only from the third that any relief is obtained, as all mucous membranes are anæsthetized by a two per cent. solution of cocaine. The part this factor, however, takes in the totality of an expulsive pain must be so slight that it may be neglected, and almost before making experiment we can say, on physiological grounds, that any certain or marked relief is out of the qûestion. In six cases in which he has tried the drug either in the form of saturated tampon (five per cent.) or painting the vulva with it, he has found practically no amelioration of the pains, and he therefore did not detail the individual cases. In a very elaborate paper by Fränkel ("Ueber Cocaïn als Mittel zur Anästhesirung der Genital-schleimhaut") he confirms this view, and concludes his paper as follows: "That it is little probable that cocaine can be used as a local anæsthetic in labor, because anæsthesia and analgesia developed under this drug are essentially superficial, while the pains of labor are the result of distention and stretching of the tissues through their whole thickness." Drs. Dabbs and Hartzhorne have, however, used it extensively, and with very favorable results. Mr. Phillips said he had met with isolated instances in the literature on this subject in which a favorable result was thought to have occurred, but they scarcely influence the general result.

4. In this class it has suggested itself that cocaine might be useful, as, for instance, to anæsthetize the vulva in the operation for induction of premature labor by catheter, or the application of forceps on the perineum, or removal of an adherent after-birth. Hale reports two cases where it was entirely successful in post-partum "vesical neuralgia." He injected 20 minims of a two per cent. solution into the urethra, with an immediate disappearance of the pain. A case is related in the *Cincinnati Lancet and Clinic* (November 4, 1884), in which cocaine was applied with success to the vulva of a recently-delivered woman in order to pass the catheter, and there seems no reason why in cases like this the drug should not be of great service.

5. It is in *sore nipples* that cocaine has been most frequently tried, and again with doubtful results. Hergott first made a local application of a four per cent. solution in nine cases, and concludes that suckling can be allowed without pain; the fissures rapidly heal, and cauterization of them by nitrate of silver becomes a painless proceeding. Mecuen found complete relief from pain in three cases he experimented upon. Mr. Phillips has tried a six per cent. solution in four cases, and was disappointed with the result. The anæsthesia produced was more or less deep, but only lasted two minutes, and the sores certainly did not tend to heal more quickly. In three cases weaning was deemed necessary, while on the fourth healing took place and successful lactation followed. Children do not object to taking the nipple after the application of the drug, nor do they appear to suffer in general health.

We may therefore draw the following practical conclusions: 1. That cocaine in whatever way administered for uncontrollable pregnancy vomiting is a valuable adjunct, and in some cases a superior drug to those at present in vogue. 2. That during the painful earlier stages of labor, especially in primiparæ, it materially assuages the pains, but neither quickens them nor retards their onset, and hence has no effect on the actual dilatation. 3. That it is useless in mitigating the pains of expulsion and those caused by pressure on the perineum. 4. That in the case of sore nipples it relieves the pain attendant on suckling, though the duration of its effects is not sufficiently long to be of material service. It is, however, without any apparent detrimental effect upon the suckling.

ARTIFICIAL RIPENING OF CATARACTS.

The process of the degeneration of cataracts extends over periods of months and years, leaving the patients in a helpless condition, and in many instances obliging them to forego the enjoyments of life and resign life-supporting and profitable positions.

So long as the cataract is not mature, an operation is contraindicated. So long as the cortical substance is still firmly adherent to the capsule, extraction of the lens cannot be performed with perfect safety to the patient, for, as Förster correctly states, the remaining layers of cortical substance will imbibe aque-

ous humor, swell, and give rise to iritis and other dangerous complications. In order to produce more rapid degeneration of the lens-substance, he proposes trituration of the cortex. The procedure consists of gently rubbing the cornea with the blunt end of an instrument, usually a strabismus-hook or iridectomy-forceps. The pressure exerted upon the cornea is transmitted to the lens, loosening and splitting the still adherent and semi-opaque cortical lens-fibres. These, in the course of days and weeks, become perfectly opaque. The object of the operation has been accomplished; the cataract is mature.

Dr. Boerne Bettman (*Journ. of the Amer. Med. Assoc.*, December 3, 1887) has employed this expedient of Professor Förster, modifying it somewhat. Instead of rubbing the cornea he brings the pressure to bear directly upon the lens by pressing against the capsule with a spatula usually employed to replace prolapsed iris. Dr. Bettman prefers this method to the one recommended by Förster for the following reasons:

Trituration of the lens always follows an iridectomy. After the escape of aqueous humor iris and lens move up against the cornea; the iris contracts and the pupillary field becomes small. When the blunt instrument now is rubbed against the cornea the pressure, unless limited to the small pupillary area, will not only break down the lens-fibres, but will subject cornea and the delicate iris-tissue to an unnecessary irritation. Dr. Bettman therefore, as before mentioned, carefully passes the spatula into the anterior chamber, and, if necessary, behind the iris, and gently strokes and presses the lens in any direction.

Great care must be observed not to exert too much pressure, otherwise a dislocation of the lens might ensue. The flat side of the instrument should always be held against the lens-surface. If tilted so as to bring the edge to bear upon the capsule, it no doubt would rupture the latter. It is unnecessary to add that the strictest antiseptic precautions are religiously adhered to, and that the eye should be fixed in case the patient shows an unruly disposition. This, however, is rarely necessary, owing to the anæsthetic effects of cocaine. The distribution of opaque lens-fibres and general breaking up of the cortex can readily be seen with the naked eye during the operation. The mother-of-pearl sectors split, break into pieces, and are forced from their former positions. In the course of a few days, yea, even after twelve hours, the entire appearance of the lens has changed. Its anterior surface has now a uniform mottled appearance. When illuminated it frequently resembles a bag entirely filled with a granular mass. In successful cases it becomes entirely opaque, cutting off the yellowish reflex from the nucleus.

This delicate manipulation has rendered Dr. Bettman great service, and has rescued many of his patients from a condition which, to say the least, was unpleasant.

The results of trituration of the lens are usually very marked, and in some cases may be termed instantaneous. Vision equal to from $\frac{3}{200}$ to $\frac{4}{200}$—*i.e.*, counting fingers at from three to four feet—can be reduced to qualitative perception of light in twelve hours. In the majority of cases—in fact, in every instance where the trituration has been thoroughly accomplished—the lens can be extracted in from three to six weeks after the preliminary operation. During the removal of the opaque lens the cortical matter escapes as a semi-fluid, flocculent mass. The pupillary field is easily cleared of cortical remnants, and the danger attributed to the lodgment of transparent particles of lens-substance in the wound or on the iris is entirely overcome.

The conclusions arrived at in this paper are as follows: The operation is a feasible one. It is easily executed. There is no danger accompanying it. Its results are always marked and rapid. The subsequent removal of the lens is made more facile, and danger from secondary complications after extractions is greatly lessened.

NERVOUS ORIGIN OF RHEUMATOID ARTHRITIS.

At a meeting of the Royal Medical and Chirurgical Society, Dr. Archibald E. Garrod introduced a paper, entitled "A Contribution to the Theory of the Nervous Origin of Rheumatoid Arthritis," of which the following is an abstract (*Lancet*, November 26, 1887): Some of the arguments which have been put forward in support of the view that rheumatoid arthritis is a disease of nervous origin are examined in the light of a large number of cases. The statistics given are based upon a series of five hundred cases. Arguments are adduced in support of the following propositions: 1. That the causes of rheumatoid arthritis are such as might be expected to act upon the central nervous sys-

tem. 2. That the distribution of the lesions is such as would be likely to result from nervous lesions. 3. That the distribution of the lesions is similar to that of certain arthropathies of spinal origin. The influence of heredity is first discussed. In two hundred and sixteen cases out of five hundred there was a family history of joint-disease, sometimes of more than one variety. There was a history of gout in eighty-six, of probably gout in ten, of rheumatism in sixty-four, and of other conditions which may be classed together as probably rheumatoid arthritis in eighty-four. These figures can only approximate to accuracy as they are based upon information given by the patients. The influence of uterine causes is next discussed, and it is shown that when the female cases are arranged according to the age of the patients when the disease commenced, there is a steady increase in numbers up to the period of the menopause and a steady decrease after that period. Among the male cases there is no such regularity. Of the five hundred patients four hundred and eleven were women and only eighty-nine men. The influence of anxiety and care, mental shock, injuries, damp, cold, and previous rheumatic attacks is discussed, and each of these is shown to have a share in the causation of the disease. Stress is laid upon the extreme symmetry of the joint-lesions in rheumatoid arthritis, and some examples are adduced. Reasons are given for believing that there is a tendency for the joint-lesions to advance up the limbs from the periphery towards the trunk. This order of invasion is by no means constant, but in particular instances it is well marked. In the localized form of the disease it is of course absent. The knees rank only second to the hands in liability to rheumatoid arthritis. Lastly, it is shown that there is a close resemblance between the distribution of the joint-lesions in rheumatoid arthritis and in the recorded cases of arthritis following spinal concussion, whereas in more local spinal injuries one or more large joints are usually affected, as in tabes dorsalis. The associated nervous phenomena, such as muscular wasting, increase of tendon reflexes, etc., are regarded as secondary to the joint-lesions, and as therefore lending no efficient support to the theory of the nervous origin of rheumatoid arthritis.

Sir Dyce Duckworth agreed with the views expressed in the paper. The morbid anatomy of this disease required very much more investigation than had at present been given.

Dr. Ord had been interested in this subject for many years. The joint-troubles were to be regarded rather as symptoms than as the whole disease. He came to the conclusion that nervous influences had a great deal to do in the causation of this disease. He believed that nervous influence was reflected from the uterine organs to the spinal cord and on to the joints. The cord also exerted a primary influence. Injury might lead to a joint-affection, and then the nervous system tended to propagate the joint-change to other joints. He compared rheumatoid arthritis to progressive muscular atrophy. In a case of chronic cervical pachymeningitis there was much muscular and cutaneous wasting, and later a remarkable degree of chronic osteo-arthritis developed. In another case of spinal injury joint-trouble followed at a long interval the muscular wasting.

Dr. Buzzard said that in association with Charcot's disease of the joints there was a much clearer evidence of disease in the central nervous system than was the case in rheumatoid arthritis. He alluded to the various crises and paroxysmal secretions occurring in tabes dorsalis as evidence of the involvement of the central nervous system in most cases. Eight years ago he promulgated the theory of a joint-centre in the medulla oblongata, and he brought forward arguments to show that acute rheumatism might be an acute affection of the medulla oblongata.

Dr. Herringham alluded to the belief which he shared that cold and damp were very potent causes of rheumatism and rheumatoid arthritis.

Dr. Garrod, in reply, said he should have classed Dr. Ord's case of myotrophy as one in which the arthropathy was due to definite nervous lesions, and therefore not of the same category as rheumatoid arthritis.

THE MODERN METHOD OF TREATING SYPHILIS.

At the meeting of the New York Academy of Medicine, held October 6, 1887, the president, Dr. A. Jacobi, in the chair, Dr. P. A. Morrow read a paper with this title (*New York Med. Journal*, December 3, 1887). The modern method of treating syphilis, he said, differed in the mode of administering the remedy, not in the remedy employed, from the treatment of four hundred years ago. With the addition of iodide of potassium, mercury still remained the basis of all special

curative treatment. The new mode of administering the drug hypodermically had not found much favor in this country, but it had been revived and was being considerably used in Europe. He had visited the hospitals at Paris the past summer, and there observed the method of using it and the results obtained, constituting in a sense personal experience with it.

In endeavoring to appreciate the therapeutic worth of the modern method of treating syphilis we were confronted by a mass of confusing clinical statistics, as well as contradictory statements on the part of the experimenters,—some bearing testimony to its superior efficacy, others depreciating its value and condemning it as injurious and impracticable. A careful weighing of this clinical testimony, balanced by the author's own observation and experience, justified the following conclusions: 1. The hypodermic use of mercury, in simplicity, convenience, accuracy, rapidity of action, and the development of a maximum effect from a minimum quantity of the drug, constituted a decided improvement. 2. It was not so apt to cause salivation, gastro-intestinal disorders, and other toxic symptoms. 3. There was a remarkable unanimity of opinion among observers as to its efficacy in suppressing the active manifestations of the secondary stage, and hastening their involution. 4. The statements that the subcutaneous introduction of mercury increased its potentiality and widened the range of its specific action, enabling it to subdue not only refractory secondary lesions which resisted ordinary treatment, but also the tertiary lesions, might be considered as still *sub judice*. 5. The allegation of greater permanence of effect, preventing relapses and preserving the patient from manifestations of the diathesis for a long period, was not proved. 6. The more pretentious allegation that the hypodermic introduction of twenty-five centigrammes of the bichloride, or forty centigrammes of calomel, cured syphilis must be rejected as extravagant and absurd. 7. The irritant action of mercury introduced hypodermically, manifested in the production of pain and local accidents, rendered its general employment in the systematic treatment of syphilis impracticable. 8. The proper position of the hypodermic method in the therapeutics of syphilis was in the category of adjuvants. 9. Its employment was indicated when the necessities of the case demanded a rapid and intense mercurialization. In certain emergencies, when the integrity of an important organ was threatened, for example, its prompt and energetic action rendered it superior to other modes of mercurialization. 10. In exceptional cases, marital syphilis, for example, where the exigencies of the situation demanded secrecy in treatment, with the speediest possible suppression of the symptoms, this method was to be recommended. 11. It constituted a most excellent reserve method in cases where gastro-intestinal irritability was so marked as to forbid the introduction of mercury by the stomach. 12. In cases of tertiary syphilis, where an iodine idiosyncrasy was so marked that iodide of potassium could not be employed, hypodermic injections of mercury should be substituted. While his own impression was that the hypodermic method would never supersede the common modes of employing mercury, he regarded it as a decided acquisition to our therapeutic resources against syphilis,—too valuable to be ignored or practically disregarded, as had been the case in this country.

THE ANILINE TREATMENT OF PHTHISIS.

PROFESSOR KREMIANSKI, who, it may be remembered, proposed, at the Moscow Congress of Russian medical practitioners held at the beginning of the present year, to treat phthisis by means of aniline, and whose views were generally condemned at the time, has just published a long letter complaining bitterly that he has been misrepresented and misunderstood, and that the most influential medical journals in Russia have refused to admit papers by various observers which contained favorable reports of trials made of the treatment, while prominence has been persistently given to all unfavorable and unsuccessful cases. Again, it seems that the bactericide treatment by no means consists merely of aniline inhalations, but that many other substances are employed either in conjunction with aniline or without it. The detailed description of the treatment is set forth in Professor Kremianski's book, and apparently has not been at all accurately reported in any of the better known Russian journals. He is anxious to point out that some observations which have recently been published on the action of aniline in large doses on the lower animals do not really militate against his views, because he never proposed that more than very minute doses of aniline should be given. He is quite prepared to admit that his plan of treatment is as yet

very imperfect, and that it requires much more elaboration; but he insists that his later experience only goes to confirm his belief in its value, and numbers of brother practitioners who have tried it fairly have obtained good results. He expresses his regret that he has as yet been unable to make arrangements for publishing his book in some language more accessible than Russian to the majority of foreign medical men, from many of whom he has, he says, received inquiries about the system.—*Lancet*, November 26, 1887.

TREATMENT OF THORACIC ANEURISM BY THE INTRODUCTION OF WIRE.

M. CHARMEIL, of Lyons (*Revue de Médecine*, August and November, 1887), has collected the details of fifteen cases of aortic aneurism in which "Moore's method," as he terms it, was employed, from the original case in the Middlesex Hospital to three previously unpublished cases in the practice of M. Lépine. Although not one of the fifteen cases has resulted in the cure of the aneurism, M. Charmeil concludes that the practice itself does not involve any direct danger to the patient, and that the results ascertained at the necropsies have been encouraging. Clinically the treatment has nearly always been followed by local improvement, as well as by relief of subjective symptoms. He therefore thinks the method is justifiable and worthy of continued trial, and indicates as essential to its favorable practice a preliminary exploration of the aneurism by means of acupuncture needles, the use of the watch-spring of Bacelli introduced through a flattened canula, and the most rigid adoption of antiseptic precautions. At the same time recourse should be had to Tufnell's dietetic treatment.—*Lancet*, December 3, 1887.

THE TRUE PLACE OF MILK IN THE TREATMENT OF DIABETES MELLITUS.

In our analysis of the paper recently published by Dr. Austin Flint as to the treatment of diabetes mellitus, Dr. Flint was emphatic as to the harmfulness of milk in this disease. It is only fair that the other side of the question should likewise be introduced, since numerous physicians disagree with the emphatic statements of Dr. Flint. Of course, it can scarcely be claimed that milk is a specific for diabetes, in fact such a remedy is yet to be found, and the dietetic treatment of diabetes is perhaps still the most efficient. In the *Med. News* for November 5, 1887, PROF. JAMES TYSON publishes an article on this subject which distinctly favors the use of milk in the treatment of diabetes. Dr. Tyson always commences treatment by the use of skimmed milk, and states that frequently he has found glucose entirely to disappear from the urine and the quantity of the latter become normal within a week after instituting the skimmed-milk treatment, and this too in a case where the antidiabetic diet had failed to produce any effect. Unfortunately, however, the reduction in the quantity of sugar which follows the use of milk or buttermilk is often not permanent. Skimmed milk is decidedly superior to unskimmed milk in this affection, though it is difficult to say why this should be the fact. It is perhaps possible, as suggested by Dr. Tyson, that Dr. Flint's unfavorable results with milk depended upon his using unskimmed milk, since, as Dr. Tyson says, it is quite inexplicable how any one who has tried the skimmed-milk diet at all should come to an unfavorable conclusion as to its value.

REMOVAL OF TUMOR FROM THE FEMALE BLADDER BY SUPRA-PUBIC INCISION.

At a recent meeting of the Clinical Society of London, DR. GIBBONS and MR. PARKER (*Lancet*, December 3, 1887) contributed a case of tumor (myoma) of the female bladder removed by the galvano-cautery through a dilated urethra combined with supra-pubic incision, illustrating also the value of the electric light for purposes of exploration of the bladder. The patient was a girl, aged 18, of good general health, and the daughter of healthy parents. The earliest symptoms noticed were inability to retain the urine, and pain on making effort to do so. She was treated "for stone in the bladder, but without any relief." When admitted into the Grosvenor Hospital for Women and Children, she was found to have lost all control over the urine, which dribbled away from her; she experienced a dull aching pain in the perineum. There was no blood in the urine at the time. On bimanual examination, a tumor was detected in the bladder; rapid dilatation of the urethra was accomplished with a view to a more accurate examination of this tumor. A week subsequently, the patient being under an anæsthetic, the tumor was removed by means of a galvano-cautery écraseur; the loop of platinum wire was in-

troduced through the urethra, and fitted over the tumor with the aid of the fingers passed into the bladder through a supra-pubic incision which had been previously made for this purpose. When the platinum loop had been fixed round the base of the tumor, it was tightened up and the current turned on. In five minutes the division of the tumor was complete; there was no hemorrhage during, or subsequently to, the operation. After removal the base of the growth and the interior of the bladder were carefully examined by the eye, a small incandescent electric lamp being introduced for the purpose; the advantages of this method were at once very apparent, for every part of the bladder could in turn be seen. The wound into the bladder was carefully sutured. There were no subsequent bad symptoms. The girl quickly and completely recovered, and has remained well since. In some remarks which followed the paper, the authors advocated a supra-pubic incision in similar cases, and recommended the use of the electric light. They also drew attention to the value of carefully suturing the bladder after supra-pubic cystotomy, as materially aiding towards a rapidly successful result.

MR. CROFT said that the case was a very rare one in so young a female. He concurred in the treatment of the tumor by opening the bladder. He related a case of vesical stone in a boy, employing the suture; on the third day after lithotomy scarlet fever appeared, but, notwithstanding, the sutures held and the bladder healed naturally. Tumors could be removed from the bladder without the aid of sight. Severe cystitis with fetid urine would contraindicate closure of the bladder.

DR. BRAXTON HICKS had removed two tumors from the posterior wall of the female bladder by dilatation of the urethra and snaring the tumors, which had each a diameter of one inch and a half, by means of a silver wire. Both cases were malignant. The galvano-cautery would prevent bleeding.

MR. BUCKSTONE BROWN thought it would be impossible in most cases to make use of light; everything has to be done by the aid of mere touch, which was quite sufficient for all cases. In order to use the cautery it was unnecessary to see exactly what is being done. Straight forceps will, by "quiet" torsion, bring away even the toughest tumor. Phosphatic matter was apt to be deposited on the base of a tumor which had been removed.

MR. J. H. MORGAN considered that the electric light was not generally useful in the removal of tumors from the bladder in adults. In some cases in children the light would be useful. The drawing of the tumor had the aspect of a papilloma. He did not think the wound closed speedily, and he should not have used a drainage-tube in Mr. Parker's case. He would be inclined not to employ the suture.

MR. BENNETT asked why the supra-pubic incision was employed, for such an operation could hardly be often necessary; what were the exact reasons for this mode of operation? In the female bladder the necessity for this incision must be extremely rare.

MR. R. W. PARKER, in reply, said he would only suture a healthy bladder. In Mr. Brown's cases the electric light would be extremely useful after the operation to examine the parts and for employing the actual cautery. The supra-pubic operation was not a serious one in his experience. Mr. Shattock agreed that the tumor was a myoma.

MR. CROFT said that the notion advanced by Dr. Braxton Hicks that the malignant disease would tend to spread to the edges of the fresh wound was imaginary.

THE HARMFUL ACTION OF LARGE DOSES OF THALLIN.

In the *Therap. Monatshefte* for 1887, p. 53, DR. EHRLICH speaks of the bad effect of large doses of thallin. The author cites the case of a patient (æt. 24) who was suffering from abdominal typhus, and on the tenth day of the disease he began to administer, according to the prescribed method of "progressive thallinization," doses of .08 grm. (about 1¼ grains) of thallin. tart. hourly. On the sixteenth day fever set in after a .30 grm. (4½ grains) dose of thallin. As on the next and following days the temperature again rose, accompanied by chills, the patient was again treated with increased doses of thallin, up to the twenty-fifth day of the disease, when from .56 to .58 grm. (about 8½ to 9 grains) of the drug were given hourly. On account of vomiting its use had to be discontinued. The temperature immediately rose. After the forty-second day the temperature slowly began to sink, and death from exhaustion occurred on the fifty-second day.

A post-mortem examination showed that the patient had been suffering from abdominal typhus, which, however, was in the process of recovery. The aorta and branches were

found to be greatly contracted, the heart was dilated, and hypertrophic endocarditis mitralis verrucosa recens was found to have existed; parietal thrombi were found in the recesses of the left ventricle. The kidneys were greatly enlarged, covered with numerous white spots; the ends of the papillæ were found to be covered with a hemorrhagic discolored deposit.

Former experiments which the author had made on animals with thallin had caused a similar appearance of the kidneys. Dr. Ehrlich is of the opinion that the changes in the circulatory system, principally the hypertrophy of the heart, which would naturally retard elimination, had caused a "cumulative poisoning" by thallin.

In order to prevent the possible occurrence of accumulation of thallin in the body, the author advises that the treatment should begin with hourly doses of .07 to .08 grm. (1 to 1¼ grains) of the drug, which should be increased very gradually, but in no case should ever exceed an hourly dose of .20 grm. ($3\frac{8}{10}$ grains), which would be 4.8 grm. (about 74 grains) daily.

Cardiac weakness or inflammation of the kidneys should be taken as contraindications for the use of thallin; also cases of typhus, which are only affected by very large doses of the drug, should not be treated with it.—*Centralblatt f. d. Med. Wissenschft.*, October 1, 1887.

DELIVERY BY THE VAGINA IN EXTRA-UTERINE GESTATION.

At a recent meeting of the Obstetrical Society of London a paper on the above subject was read by Dr. Herman (*Lancet*, December 3, 1887). The author said that no general rules could be applied alike to all cases of extra-uterine gestation and at all periods of their history. Different cases required different treatment, and individual cases required different treatment at different periods in their history. The object of the paper was to consider in what cases and at what time an extra-uterine gestation cyst might with advantage be emptied through the vagina. The author first related a case under his own care. The patient was 40 years of age. The extra-uterine pregnancy was preceded by a long period of sterility. Symptoms like those of rupture of the sac occurred at about two months' pregnancy. Fœtal movements ceased at eight months' pregnancy. At nine months spurious labor-pains occurred, and lasted nearly a month, and these labor-pains were accompanied by spontaneous dilatation of the cervix. Then the pains went off, the breasts diminished in size, and the cervix contracted. To attain certainty as to the diagnosis, the cervix was subsequently dilated, and this dilatation was followed by febrile disturbance. The cyst was then opened per vaginam, the child removed, and the cyst frequently washed out with carbolic solution. The placenta came away on the sixteenth day. Two months and a half afterwards the cyst had completely closed. The author had collected thirty-three cases in which an extra-uterine gestation cyst had been emptied by the vagina, and from an examination of them he drew the following conclusions: 1. The operation of opening an extra-uterine gestation sac by the vagina early in pregnancy, before rupture has taken place, by the cautery, knife, or otherwise, is a dangerous and unscientific proceeding. Abdominal section ought always to be preferred to this. 2. Soon after rupture has taken place, when interference is called for to arrest hemorrhage, abdominal section is more likely to succeed than vaginal. 3. When rupture has taken place, and the effusion of blood is followed by pyrexia, the indications for incision of the vagina are the same as those in hæmatocele from any other cause. 4. At, or soon after, full term, before suppuration has taken place, there may be conditions which indicate delivery by the vagina as preferable to abdominal section. These are, 5, when the fœtus is presenting with the head, breech, or feet, so that it can be extracted without altering its position, and, 6, when it is quite certain, from the thinness of the structures separating the presenting part from the vaginal canal, that the placenta is not implanted on this part of the sac, and it is not certain that the placenta is not implanted on the anterior abdominal wall. 7. If the child cannot be delivered by the vagina without being turned, abdominal section should be performed. 8. No attempt should be made to remove the placenta. 9. The after-treatment should consist in frequent washing out of the sac. 10. After suppuration has taken place, the spontaneous opening of the sac into the vagina is one of its more favorable terminations.

AGARICIN IN PHTHISIS.

Agaricin is recommended by Jonng as a preventive of the weakening perspiration so frequently met with in phthisis. He advises its use in the following formula:

℞ Agaricini, .50 grm. (gr. vii$\frac{7}{10}$);
Pulv. Doveri, 7.50 grm. (gr. cxvi);
Gummi arab.,
Pulv. altheæ, āā 4 grm. (gr. lxi$\frac{7}{10}$).
F. pil. ne. centum.
S.—1 to 2 pills daily.

By the use of agaricin in the above form its laxative properties are reduced.

Dr. Julius Lauschmann, of Budapest (*Gyógvászat*, 1887, 27; *Pest. Med.-Chir. Presse*, 1887, 34), states that he has found that agaricin has the undoubted property of greatly reducing the perspiration of consumptives.

He has found it of special value where the perspiration covers the body like a sort of sticky secretion. One pill of the above formula given at evening usually acts with promptness. The next night also the perspiration will fail to make its appearance, or, if it does, it will be in such slight quantities that the sleep of the patient will not be disturbed. It will be observed that the effect of the one dose will sometimes last for two or three days. It will not act quite so well in some cases where it has already been used, but where after a time the perspiration has returned. It seems, therefore, that the first dose only is accompanied by such marked results, as the following doses seem weaker. In cases where one pill was not sufficient a second was given, and the desired result obtained. In cases of partial or only slight sweating the action of the drug was but slight, and in some cases seemed to exert no effect whatever. Neither a strong condition of the patient nor rapidly-advancing consumption contraindicates the use of agaricin. Its use is never accompanied by unpleasant symptoms, only now and then diarrhœa was observed. In a few cases this diarrhœa was considerable and necessitated special treatment; in one case there were two or three loose movements, which, however, ceased as soon as the drug was discontinued.

This diarrhœa is always due to agaricin, as it irritates the bowels and causes hyperæmia. This property might also explain its antidiaphoretic action.

The drug was not observed to affect the heart's action, respiration, or temperature in the least.

One other point should be mentioned regarding the formula advised by Jonng. Every pill contains, besides the agaricin, also .075 grm. (1$\frac{1}{6}$ grains) of Dover's powder. It is well known that Dover's powder also lessens perspiration. In order to secure the pure action of agaricin, Dr. Lauschmann gave, in a few cases, pills without Dover's powder.

If the patients perspire also during the day, a pill may be given in the morning in addition to the evening dose. It was observed that pure agaricin reduced the perspiration.

The formula of Jonng has two advantages over the pure drug: first, it lessens its laxative action; and, secondly, also lessens the catarrhal symptoms.—*Med.-Chir. Rundschau*, Wien, October 1, 1887.

TOTAL BLINDNESS FROM CORTICAL LESION.

The experimental researches of Munk and others have demonstrated that the centre for visual perceptions exists in the occipital lobes, and many clinical observations tend to corroborate this conclusion. Nevertheless, much yet requires to be accomplished, both experimentally and clinically, before this region of the brain can be completely mapped out into its functional areas. An interesting observation by Bouveret is published in the current number of the *Lyons Médical* (No. 46). The patient was a man aged 72, who was found holding on to the trunk of a tree, having clearly been overtaken by a cerebral accident. He was able to walk, but with difficulty; his speech was not natural, and he could not give his address. On physical examination by Bouveret one day later, the patient was found not to be febrile; the intelligence was impaired to some degree, but there was no word-deafness. The pupils were moderately dilated, and acted but slightly to light. The man appeared to be totally blind. There was no motor aphasia; memory, however, is said to have been greatly deranged. The motility and sensation appeared to be unaffected; the cranial nerves were healthy; the optic disks were healthy. The urine contained a trace of albumen. There were no signs of valvular heart-disease. The man lived for seventeen days after the onset of the brain-disease; five days before death slight left hemiplegia, with contracture, appeared, the left arm and leg being affected, but the face not perceptibly. The necropsy demonstrated the existence of atheroma of the cerebral arteries; both posterior cerebral arteries were atheromatous and occluded by gray-red clots of firm consistence, and adherent to the walls of the vessels. In connection with these arterial obliterations were found two areas of softening, of unequal extent, on the lower and internal aspect of the brain in the occipital region. The softening

destroyed the cortical substance on the internal aspect of both occipital lobes. The cuneus was involved on both sides, and a large extent of the under surface of the temporal lobe in front of the calcarine fissure, but more on the right side than the left. The kidneys were the seat of an interstitial change. The left ventricle was very hypertrophied, and two thrombi undergoing softening were found in the heart; and from these, it is thought, emboli were derived which set up the thrombosis in the posterior cerebral arteries.—*Lancet*, December 3, 1887.

SULPHATE OF SPARTEINE IN CARDIAC AFFECTIONS.

Dr. A. Maslowski (*Russk. Med.*, Nos. 11 and 13) has recently used sulphate of sparteine in three cases of cardiac diseases, which were as follows:

1. Pulmonary emphysema with bronchitis and chronic myocarditis.

2. Pulmonary emphysema with irritable heart.

3. Insufficiency of the aortic valves and aneurism of the aortic arch.

His observations regarding the action of the drug (as prepared by E. Merk) have led him to the following conclusions:

1. Sparteine, when given in medium doses, excites the heart's action, whereby its contraction becomes stronger and the pulse fuller. The rapidity of the pulse is generally somewhat decreased.

2. The action of the drug is very rapid. The rhythm of the impaired heart's action is not entirely restored, although the contractions become considerably stronger.

3. The quantity of urine is greatly increased by the drug. Cumulative or unpleasant accompanying effects were never observed.

THE PROPERTIES OF ACETANILIDE.

MM. Destrée and Slosse, of Dr. Desmeth's clinic in Brussels, have recently addressed themselves to the solution of some questions concerning acetanilide, or antifebrin, which have hitherto been left unanswered, or regarding which only contradictory observations have been published. Though acetanilide was credited with a microbicide action by Krieger on the ground of its success when used with collodion as an antiseptic application in surgery, Miquel had published some observations in the "Annales de l'Observatoire de Monsouris," showing that considerable quantities of acetanilide may be introduced into broth cultures without hindering the development of colonies. In order to test this alleged property of the drug, MM. Destrée and Slosse inoculated a number of tubes of alkaline and slightly acid gelatin with bacterium æriginosum in the Hygienic Laboratory of the Brussels University. In six days' time, the gelatin in some control-tubes had become liquid: that is, the tubes containing one or two per cent. of acetanilide was still quite solid and unchanged in color, presenting only a slight cloudiness near the surface, in which portion the microbe was seen by the microscope. It therefore appeared that the acetanilide, though it had retarded the development of the bacterium to a very marked extent, had by no means destroyed it. Regarding the effect of acetanilide on the vaso-motor nerves, Anseroff, in a paper read before the Moscow Congress last winter, showed reasons for believing that it acted as a stimulant to the vaso-dilator nerves. MM. Destrée and Slosse, however, after injecting one thigh of a frog with the drug, cut off the two thighs of the animal, and noted that the blood flowed much more freely from the limb that had not been injected than from the one which had, thus showing that the acetanilide had had a vaso-constrictor effect. The effect on the blood has been studied by various observers. Hinsberg and Kast, and also Weill, have shown that ordinary medicinal doses do not affect the blood, but 5 or 6 grammes given to a medium-sized dog produced cyanosis, due to the transformation of the hæmoglobin of the blood into methæmoglobin. Hinsberg and Kast, and also Murray, found that the blood-pressure is augmented by acetanilide, and Reise speaks of the pulse as being increased in tension. Hare (*Therapeutic Gazette*), on the other hand, found the reduction of temperature frequently accompanied by a diminution of the intra-arterial pressure, which, however, was interrupted by sudden and inexplicable augmentations. MM. Destrée and Slosse carried out a series of observations on rabbits with a Ludwig's kymograph in the Physiological Laboratory of the University of Brussels, and found that the pressure in the carotid could be lowered from forty-five to thirty-one millimetres by three injections of 1 centigramme of acetanilide. The reduction appeared, however, to be temporary only.—*Lancet*, December 3, 1887.

THE ACTION OF ACETPHENETIDIN.

Dr. O. Hinsberg and A. Kast have been recently experimenting with acetphenetidin. They gave doses of 1 to 2 grammes (15½ to 31 grains) to animals without producing any disagreeable effect. They specially speak of its value as an antipyretic in cases of phthisis. After doses of .2 to .5 gramme ($3\frac{1}{10}$ to $7\frac{7}{10}$ grains) the temperature would fall about 2° C. The fall of temperature is gradual, and reaches its maximum in about four hours after the administration of the drug. There was no sudden sinking of the temperature, no violent or profuse perspiration, no collapse, and (what should be specially noticed) even after the second and third repetition of .5 grm. ($7\frac{7}{10}$ grains) doses no cyanosis was observed. The rapidity of the pulse was not influenced by the drug to any marked degree. In three or four hours the temperature would gradually begin to rise again, without, however, being accompanied by any chills. The preparation was easily taken by the patients without occasioning any irritation of the stomach or bowels.

Acetphenetidin is composed of fine, needle-like crystals, which only slightly dissolve in water, but which are easily dissolved in alcohol or vinegar; they are colorless and tasteless.—*Deutsche Med.-Zeit.*

THE BACILLUS OF WHOOPING-COUGH.

Dr. Afanasieff has succeeded in finding and cultivating what he believes to be the true bacillus of whooping-cough. This microbe differs distinctly from all other bacteria which have been described. It is somewhat like Friedländer's pneumonia bacillus, but is shorter and thinner than the latter; besides, in gelatin it does not form nail-shaped cultures, those which are produced having no hemispherical head. Its potato cultures, too, are quite different from those obtained from Friedländer's bacillus. Afanasieff's bacillus exhibits a remarkable degree of vitality, for jelly cultures that have become dry and have been kept for four months, appearing under the microscope to be more or less destroyed, are still capable of producing fresh cultures when fresh media are inoculated from the dried mass. Dr. Afanasieff's researches were chiefly made from the sputum of some of his own children, who were affected with whooping-cough. The mouth was well washed out with a permanganate solution, and the mucus coughed up after the next paroxysm or two examined. In this mucus, after staining with methyl-violet, and in the pus-corpuscles contained in it, the bacilli could be seen with a magnifying power of from seven hundred to one thousand (Zeisse's eye-piece 3 or 4, one-twelfth oil immersion objective) as short rods, sometimes single, sometimes in twos, or even in short chains running in the direction of the mucus, sometimes again in small clusters. Their length was from 0.6 μ to 2.2 μ. Of course other bacteria were found. Pure cultures, however, were easily made on agar-agar, meat-peptone jelly, potato, etc. Dogs and rabbits were inoculated with a fluid culture mixed with chloride of sodium solution, some by means of injections into the trachea, others by direct injections into the lungs. All the animals were seriously affected, and many of them died. The symptoms were somewhat similar to those of whooping-cough, including cough, dyspnœa, and redness of the eyes. Many of the cases were complicated by broncho-pneumonia. On examining the bodies of those animals which died, the mucous membrane of the air-passages was found much reddened, and coated with a tenacious clear mucus, in which, as well as in the pneumonic patches in the lungs, the bacilli were found. Similar appearances and the same bacilli were observed in the bodies of children who had died from whooping-cough. As to treatment, inhalations and spray of various antiseptic drugs would appear to afford the most ground for hope in relieving and shortening this complaint. The author points out that the quinine, benzoin, and other substances which have been used as applications to the nasal mucous membrane by Michael and others, under the idea of combating a reflex affection, are really, perhaps, beneficial from their property of destroying bacilli.—*Lancet*, December 3, 1887.

METHYLENCHLORID COMPARED WITH OTHER ANÆSTHETICS.

The number of new anæsthetics, antipyretics, and antiseptics which have in the last few years been introduced into the practice of medicine is truly remarkable. Among anæsthetics the most important discovery was that of cocaine, which has caused such excitement in the medical world. Another anæsthetic, drumin, disappeared after it had gone the rounds of all the leading medical and pharmaceutical journals.

Now another drug has come to the fore the action of which is said to be similar to that of

drumin. We sincerely hope that it may prove of greater value and enjoy greater popularity than drumin did. But the number of general anæsthetics has been also increased; several years ago paraldehyd came into use, and only quite lately has amylen-hydrate been brought before the profession.

However, all these new drugs have failed to take the place of the two principal anæsthetics,—viz., chloroform and ether. These two still hold the position of leading anæsthetics. Perhaps the only preparation which has ever really competed with them is bromide of ethyl; however, some accidents which have attended its use have considerably checked its career.

But cases of death also occur from the use of ether, and therefore want of an anæsthetic which retains the narcotic effect of chloroform and ether, but which, on the other hand, is free from the dangerous accompanying effects of both, is keenly felt.

An anæsthetic which to a great extent possesses these qualities is, according to the experiments of PROFESSOR GENTHER and DR. EICHHOLZ, *methylenchlorid*. This drug when pure causes quick and deep anæsthesia; it does not, however, influence the circulation or respiration to such a dangerous extent as chloroform. Arguing from the recognized fact that the amount of chlorine contained in the drug is in direct proportion to the danger of its actions, it could be theoretically claimed that the use of methylenchlorid is more advisable than that of chloroform.

Methylenchlorid was used therapeutically by Richardson as long ago as 1867, but its actions were greatly overdrawn, and as the preparation which appeared in commerce under that name was by no means pure methylenchlorid, but a mixture of methylalcohol and chloroform, so the drug was not in a condition to fulfil the expectations which had been raised regarding it. Professor Gutzart proved experimentally that the former method used in preparing methylenchlorid was entirely wrong, that the result of the preparation was not methylenchlorid, but simply a mixture of methylalcohol and chloroform. This method consisted in the treatment of a mixture of chloroform and alcohol with zinc and subsequent distillation. The preparations of Kahlbaum in Berlin, Dr. Schuchard in Goerlitz, and Tromensdorf in Erfurt, which come into commerce under the names of "Commercial Methylenchlorid," and "Methylenchlorat," were nothing but an alcoholic mixture of one part methylenchlorid with four parts of chloroform. Whereas one hundred grammes (three and a quarter ounces) of this "commercial" methylenchlorid may be purchased for three and five-tenths marks (about eighty-eight cents), the same quantity of the pure drug costs twenty-five marks (about six dollars and twenty-five cents).

The physiological action of methylenchlorid was first examined by W. Panhoff (1881) with the pure material.

Genther and Eichholz compared its actions to that of chloroform on a number of guinea-pigs with the following results:

1. Anæsthesia occurs in about the same time in either drug.

2. Both drugs cause a period of excitement prior to complete anæsthesia.

3. The rapidity of the pulse does not increase during the period of excitement caused by methylenchlorid; it, however, considerably quickens during the excitement caused by chloroform.

4. In both drugs, as soon as anæsthesia is complete, there is a slowing down of the pulse and a lessening of the respirations.

These symptoms take place sooner and with greater intensity by chloroform. Stoppage of the pulse and death occur much sooner in chloroform than in methylenchlorid.

5. The fall of temperature during anæsthesia is about the same in both drugs. The greatest fall observed was in chloroform; the fall was from 35.5° C. to 29° C.

6. In methylenchlorid there is an increased secretion of saliva; this does not take place in chloroform.

7. In methylenchlorid the pupil does not always contract.

8. In methylenchlorid the rigidity of the neck is more noticeable than in chloroform.

9. In chloroform the spasmodic stretching of the extremities is more marked than in methylenchlorid.

These comparisons speak in favor of methylenchlorid, and one may prognosticate an extensive use of the drug in the future. —*Deutsch-Amer. Apoth.-Zeit.*, 170; *Pharm. Zeitschr. f. Russland*, October 11, 1887.

NEW TREATMENT OF PHTHISIS.

According to the Paris correspondent of the *Lancet*, November 26, 1887, the report of the commission appointed by the Academy to study the effects of hydrofluoric acid in phthisis has just been published. It begins by stating that glass-workers attribute a cura-

tive action to the vapors, a fact pointed out twenty-five years ago by M. Didierjean, and which led to experimentation with this agent in the Paris hospitals. The results on the whole were negative, although it was thought likely that hydrofluoric acid might prove useful in diphtheria. The question has been reopened recently by MM. SEILER and GARCIA (see *The Lancet*, October 15), who now claim for hydrofluoric acid a foremost place in pulmonary therapeutics. The Academy commission—MM. Herard, Féréol, and Proust—point out that the acid is highly antiseptic, ranking with biniodide of mercury in this respect. A solution of $\frac{1}{1000}$ to $\frac{1}{2000}$ cleanses fetid wounds. It has a considerable antibacillary power, which the commission has tested in guinea-pigs and rabbits infected by the inhalation of pulverized sputum. As regards the statement made by MM. Seiler and Garcia, the commission thinks that, taken in their *ensemble*, they are exact, although it is somewhat premature as yet to affirm that the cures are permanent. They conclude that inhalations of hydrofluoric acid possess an undoubted therapeutic action when phthisis is not too far advanced, and that they are both free from danger and easy of application. The *Journal de Médecine de Paris* publishes a long and interesting article by Dr. Ley on the treatment of phthisis by the inhalation of sulphurous acid. After relating numerous experiments upon the admixture of the gas with the atmosphere and the effects of inhalations of different strengths upon animals, the writer concludes that the therapeutic dose for man is an atmosphere containing from $\frac{1}{8000}$ to $\frac{1}{10000}$ of sulphurous acid. This may be obtained by burning six grammes of sulphur for each cubic metre of room space for the first three days; after which (the walls being saturated) five grammes will suffice. The patients should not go into the rooms until ten or twelve hours after the combustion, which should always be performed in a well-aired chamber. M. Ley advises this treatment in torpid phthisis, and recognizes febrile symptoms as a contraindication.

A CASE OF IRREPRESSIBLE VOMITING CURED BY HYPNOTISM.

M. MIALET, of Maretz, publishes in the *Gazette des Hôpiteaux*, September 27, 1887, notes of an interesting case of irrepressible vomiting, of hysteric origin, cured by hypnotism. The patient was a woman of 32, of nervous bilious temperament and moderately good constitution. Her maternal grandfather died of cerebral hemorrhage; her father and sister died of chronic tuberculosis. In 1874 the patient was attacked by a notable pseudo-paralytic weakness in the left arm, and suffered from dyspnœa, accompanied by a dry cough; there were repeated attacks of facial erysipelas, which appeared alternately with fits of hiccough resembling the bark of a dog, during eight months. Excessive dyspepsia, with considerable meteorism of the stomach, which coincided with a convulsive *tic* in the maxillary bone, distressed the patient. When these symptoms disappeared the following neuralgic phenomena appeared: clavus hystericus; ovarian neuralgia; brachial intercostal neuralgia, etc.; violent hepatalgia, circular lumbar pains, followed by paraplegia or well-marked paresis of the lower limbs. These symptoms terminated with repeated syncope, which occurred sometimes twenty times in twenty-four hours. In 1883 all abnormal symptoms disappeared. The patient was supposed to have recovered. In 1885 she experienced a sharp pain in the epigastric region and all along the lower limbs, where a notable swelling and redness appeared. This cutaneous affection, which resembled erysipelas, disappeared, and the vomitings began. From March, 1886, to February, 1887, the patient exhibited the complete series of hysterical phenomena. Energetic treatment aiming to combat the symptoms was adopted. Finding that the condition of the patient resisted every treatment, M. Mialet had recourse to hypnotism. A walnut wrapped in silver paper was held in front of the patient, five or six centimetres above the root of the nose. In order for the patient to perceive the smallest portion of this object, a considerable effort of the ocular globes and double convergent strabismus were necessary. After repeating this expedient for seven or eight days, M. Mialet succeeded in sending the patient to sleep. On February 16 he attempted suggestion, and told the patient, who was weakened by constant insomnia, to sleep uninterruptedly from 9.10 P.M. of that day to seven o'clock the next morning. This suggestion was accomplished to the letter. The subject soon arrived at the sixth degree of somnambulism described by Bernheim and Liébault; she lost all connection with the outer world. The senses of sight and hearing were suspended, excepting for the operator; there was cutaneous anæsthesia. On February 17, at 9 A.M., M. Mialet sent the subject to sleep in seven minutes with

the silver walnut; he then inquired if she had passed a good night. She replied in the affirmative, but added that she had been obliged to get up to micturate. M. Mialet suggested to her that she should micturate on waking in the morning and at bedtime, and named the exact times. The suggestion was carried out with precision. M. Mialet was equally successful in suggesting defecation. The patient suffered from constipation of long date. M. Mialet was enabled to regulate her digestion and diet. He continued this treatment until June 15. After May 3 he succeeded in making the patient accomplish his suggestions for two days and two nights after they had been made. On June 15 the treatment was left off; the patient is now in perfect health.—*London Med. Record*, November 15, 1887.

THE TREATMENT OF HEADACHES BY NITRO-GLYCERIN.

Dr. Trusevich publishes in the *Ejenedêlnaya Klinicheskaya Gazeta* a series of observations on the effect of nitro-glycerin on headaches. He adopts in the main the classification of headaches made by Dr. Day, whose work he translated into Russian, in which language it has already gone through two editions. The preparation generally used was the one per cent. alcoholic solution, though in a very obstinate case the ten per cent. solution was used, 2 drops being first given, and after an interval of two minutes 3 more. The result of this heroic medication was that the patient, a girl of 15, became pallid, and her pulse very weak; however, a little water and some smelling-salts quickly revived her, and she was none the worse. The nitro-glycerin had no effect on the headache, which was of a persistent character, and was probably due to some organic lesion, perhaps an affection of the cranial bones. As a rule, two or three 1-drop or 2-drop doses of the one per cent. solution, placed on the tongue at intervals of a very few minutes, sufficed to arrest the headache. The conclusion arrived at was that all cases which depended entirely, or almost entirely, on a vaso-constrictor neurosis are immediately curable by nitro-glycerin. In cases where the cerebral anæmia is partly due to deficiency or poorness of blood, milk, iron, arsenic, quinine, and other tonic remedies are of course required in addition to the nitro-glycerin. The chief indications for the successful treatment of migraine by nitro-glycerin are pallor of the face and a paroxysmal character of the pains, also their augmentation on pressure of the carotids, and their diminution when the head is lowered. In "nervo-hyperæmic headaches" nitro-glycerin is useful, but it only acts indirectly by dilating the vessels in other parts of the system, and thus relieving the congestion in the cerebral vessels. It is positively injurious in headaches depending on passive hyperæmia. On this subject, however, Dr. Trusevich promises a future article. As a rule, he thinks that if nitro-glycerin fails to relieve, the prognosis is probably bad, as the pain is generally due to some organic lesion, such as thickening of the fibrous coverings following chronic alcoholism or syphilis, or to some osteophyte caused by periostitis, or, lastly, to morbid changes in the cranial bones. In some headaches of rheumatic origin nitro-glycerin appears to have some effect, but Dr. Trusevich thinks that in others massage would probably be more beneficial. Where headaches are due to heart, lung, or to hepatic disease which causes passive congestion in the cerebral vessels, nitro-glycerin cannot be expected to do much good.—*Lancet*, December 3, 1887.

THE TREATMENT OF PHTHISIS BY BORAX-INSPIRATIONS.

Dr. Canio reports the results of Professor Fenoglio's experiments with borax in five cases of phthisis in the Cagliaro Hospital. Watery solutions of borax having proved insufficient, Fenoglio attempted the direct inspiration of finely-powdered borax into the lungs through the medium of a Waldenburg apparatus, condensed air being used. A large Wolff's bottle was used, having a double neck connected with the Waldenburg machine, and also with a Schultzler's mouth-canula; the bottle was half filled with fine borax-powder. The pressure of the air was regulated at will, and therefore the quantity of borax. The following were the results in the five cases successively treated: improved appetite, increased weight, lessened fever and cough and secretion, easier respiration, and better sleep at night. In hæmoptoic cases the hemorrhage diminished. The treatment lasted about a fortnight, and the above advantages are the more important because all the cases were advanced in character, so that still better results may be expected with earlier cases. Dr. Canio hopes that the above treatment will be tested by others.—*London Medical Record*, November 15, 1887.

A CASE OF MYOMA UTERI TREATED WITH HYDRASTIS CANADENSIS.

Our readers will remember that in our last number we spoke of a case of myoma uteri which had been treated with hydrastis canadensis with excellent results. The writer (Dr. Fuchs) was not certain, however, whether the drug had reduced the size of the tumor or not, as he had been unable to make a thorough examination; the menstruation had, however, become perfectly normal under the use of the drug, and the patient's general health was very good.

Dr. Vinc. Schmidt, of Prag (*Prager Medicinische Wochenschrift*, October 19, 1887), writes of a similar case in his own practice where the beneficial actions of the drug were still more marked than in the one spoken of by Dr. Fuchs.

The case was that of a woman, aged 46, who had been married twice. Since her fourteenth year menstruation had always been regular and moderate, lasting from three to four days. Fifteen years ago she had committed an abortion during the third month of pregnancy, and was for some time after under medical treatment. Since the middle of the year 1884 the patient noticed a slight swelling in the middle of the lower portion of the abdomen, which was hard and firm to the touch and continued to increase in size. Not until a year after this did menstruation begin to become irregular. The menstruation gradually increased until they became metrorrhages, accompanied with pain in the abdomen, back, and in the groins. The physicians and midwives who were called in tried various internal as well as external remedies, and kept the patient part of the time in and part of the time out of bed; but all their treatment was of no avail, as the woman gradually grew weaker and the tumor increased in size and the copious menstruation continued. In the middle of August of last year the patient called on Dr. Schmidt. He found her to be a woman of vigorous constitution, but remarkably pale and reduced. Upon examination he found a large tumor situated immediately below the navel. There were no symptoms of pregnancy. Measurements of different parts of the abdomen gave the following numbers: circumference of the abdomen at the navel, ninety-eight centimetres (thirty-eight and a half inches); circumference of the abdomen about a hand's-breadth below the navel, one hundred and two centimetres (about forty inches); distance from the upper edge of the symphysis to the navel, nineteen centimetres (seven and a half inches); from the navel to the xyphoid process, thirty-four centimetres (thirteen and a half inches).

On palpation the tumor was found to be about the size of a man's head and of a very hard consistency, and situated in the median line of the abdomen; also a smaller tumor was discovered, which coincided with the uterus in shape and size, and which was situated to the right of and above the larger tumor.

Percussion over the tumors gave a dull, hollow sound, which was more tympanic at the peripheries. When two fingers were introduced into the vagina they could only be moved with difficulty in the crowded pelvis. The portio uteri was soft to the touch; above it, however, one could feel the almost cartilaginous mass of the tumor. Any movement given to the uterus could be distinctly felt by the hand placed on the abdomen above the tumors. A more thorough examination was not permitted, and the patient would not hear of any operation.

In the middle of September a sudden and severe uterine hemorrhage took place; the patient fainted several times, and the pulse was very rapid and thready. She complained of ringing in the ears and blackness before the eyes. Strong stimulants were at once used; the vagina washed out with ferr. sesquichlor., and tampons inserted. On the second day the author prescribed tinct. hydrast. canad. fluid. in doses of a half-teaspoonful (about 25 drops) four times daily.

Slowly but surely the patient began to recover; the bleeding did not recommence, and the inserted tampons were but moderately soaked with blood. From time to time the patient complained of drawing pains in the lower part of the abdomen. In two weeks an examination was made, and the portio was found to be much harder, the womb closed, and the tumor found to have drawn itself back into the great pelvis. The smaller tumor had considerably decreased in size.

In the middle of October, four weeks after the hemorrhage, the woman began to bleed again, but this time everything went well beyond the expectations of the author, and one tampon daily and a few drops of aq. laurocerasi were sufficient to ease the pain of the greatly-frightened patient. Tinct. hydrast. canad. was given daily without intermission.

The author states that he observed most beneficial actions resulting from its use. It had no irritating effect on the stomach or bowels.

Later, when the patient came to her third period after the hemorrhage, no trouble was experienced, the menstruation was perfectly normal, and the patient was not even confined to the bed, and, as may be well imagined, was highly gratified with the success of the treatment. After three and a half months' continued use of the drug, the larger tumor was found to have also greatly decreased in size, and when the author last saw the patient, which was some two months ago, she seemed perfectly well and strong, and stated that her menses were always regular and moderate and unaccompanied by any unpleasant symptoms. This surely speaks highly of the drug's actions.

The fluid extract of hydrastis canadensis has for some time been used and highly recommended by Drs. Schatz, Winkel, Mendes de Leon, and others as a valuable remedy in various uterine diseases.

Up to the present time its value in the treatment of fibro-myoma has been but slightly recognized, or at least has been only slightly brought before the profession. Its use seems to entirely do away with the necessity of any operation.

This is surely a most important point, as the percentage of mortality resulting from such operations is very great.

A NEW SUBJECTIVE TEST OF REFRACTION.

Most who are concerned with testing refraction have occasionally felt the want of a test of ready application which should distinguish defective vision caused by ametropia, and that caused by an impairment of the light sense. It is true that there are numerous excellent modes of estimating refraction, and some, such, for instance, as the shadow test, are of easy application, but much time would often be saved if it could be ascertained at the outset that the impairment of vision is due to some other cause than the error of refraction. Moreover, few have sufficient confidence in their own accuracy to feel convinced that they have correctly measured a difficult astigmatism, when the correcting lenses give an unsatisfactory result. It seems to us that the test introduced by DR. WOLFFBERG will to a great extent supply this want. It consists in instituting a comparison between the patient's power of distinguishing form (as tested by Snellen's distance-types) and his color perception, as shown by the distance at which he can see a red and a green disk on a black ground. An error of refraction will have the greatest effect upon the form perception, and a defect in the light sense of the color vision. From an examination of a large number of ametropes, in whom correction gave normal vision, and of emmetropes rendered ametropic by spherical lenses, Dr. Wolffberg has constructed a table showing the distance at which the disks should be visible in each grade of impaired vision, when the impairment is solely due to an error of refraction. When the conditions correspond with the table, it may be concluded that correction of the ametropia by spherical lenses will give normal vision. Astigmatism causes a greater impairment of the form perception without a corresponding effect on the color perception, hence its presence is shown by the colored disks being visible at a greater distance than corresponds with the vision. A diminution in the distance at which the disks are visible shows, on the contrary, that the light sense is impaired, and that normal vision will not be obtained by the correction of any error of refraction that may coexist. The details of the test will be found in the *Klin. Monatsbl. für Augenheilk.*, 1886, p. 359; and an important paper showing the result of its application in a large number of cases has just appeared in the November number of the same journal. Dr. Wolffberg thinks that the test would be equally applicable to a color-blind person, as he need not see the colors as such, but only the disk as an object. One color-blind individual was tested with an accurate result, but more evidence is required as to this.—*Brit. Med. Journ.*, November 26, 1887.

ARTIFICIAL ANÆSTHESIA.

According to the Paris correspondent of the *Lancet* for November 26, 1887, M. GRÉHANT has arrived at the following interesting results from his experiments in artificial anæsthesia on rabbits. He employed a mixture of forty-five per cent. of carbonic acid, of air, and oxygen, and produced anæsthesia during two, and even three, hours. A rabbit was fixed upon a plank, with an india-rubber muzzle over its head. Two water-valves which offered slight resistance obliged the animal to inhale the air from an india-rubber bag containing fifty litres of the mixture above described, and to expel it into the outside air. The rabbit was slightly agitated at first, but after a couple of minutes the eyes became insensible. The limbs became quite limp, and

were untied. The experiment was continued until the bag was emptied. When the animal was allowed to breathe the pure air, after having been two hours under the anæsthetic, the following phenomena were observed: the temperature had fallen 2.6° C.; the respiratory movements decreased in number; the animal remained lying on its side, the respiration became accelerated, the eyes sensitive; after two minutes the animal made repeated but unsuccessful efforts to raise its head and assume its normal position; five minutes later it was able to stand on its hind legs, but its head hung down, and breathing was difficult; ten minutes later there were convulsive movements of the hind legs, the respiratory movements ceased, and the animal died eleven minutes after it had ceased to inhale the gaseous mixture. These phenomena are not constant. In another case, M. Gréhant observed weakness of the muscles which raise the head and partial paralysis of the fore limbs, after two hours and twenty-five minutes of anæsthesia, but the animal recovered. In this case the temperature fell only 1.6° C.; one hundred cubic centimetres of air which the animal expelled during the first hour contained one cubic centimetre more carbonic acid than the air it inhaled, and 1.03 cubic centimetres less oxygen, which had been absorbed by the blood. The air expired in one hour by a rabbit which died after being anæsthetized during an hour and a half contained 1.4 cubic centimetres less oxygen and 0.72 cubic centimetre less carbonic acid than the mixture inhaled; absorption of carbonic acid occurred in this instance.

THE TREATMENT OF VEIN WOUNDS.

In a lecture recently delivered before the Medical Society of Berlin by DR. HANS SCHMIDT, the speaker said that the happy results obtained by Küster in the treatment of wounds of the larger veins by means of closing the opening with Koeberl's vein-clamps or forceps, led him to further study on the subject, and to a series of experiments on rabbits. He laid bare the vena jugularis externa communis, and vena femoralis in different animals, cut into them, and then closed the wounds with *serres-fines*. These he allowed to stay in the vein. The wound was then bandaged antiseptically, and in twenty-four hours the clamps were removed. In six to fourteen days the part of the vein operated upon was cut out and examined. In most of the cases the calibre of the vein was unaltered, no thrombus having been formed. In no case had there been any after-bleeding; all the operations resulted aseptically.

The questions which Dr. Schmidt sought to answer by these experiments were as follows:

1. How long must the clamps remain on the veins in order to insure a secure temporary closing of their walls?

Answer.—It seems right to remove them in twenty-four hours.

2. How long may the clamps be kept on the veins without causing gangrene?

Answer.—In no case were the clamps kept on longer than forty-eight hours, so the above question must remain open. In practice the clamps should always be removed in twenty-four hours. If there is still an inclination to bleed, it is the fault of poor antisepsis, and the vein should be ligatured above and below the wound.

3. Does the circulation continue in the vein so treated?

Answer.—Yes. In two cases where the vessel was obliterated it was considered that too much of the walls of the vein had been caught in the clamp.

4. How does healing take place? This question cannot be answered, as the wounded vein was naturally hidden in the flesh during healing.

5. How long, after the removal of the clamps, did it take for the vein to heal securely and completely?

Answer.—Two weeks. Up to the tenth day the wound would burst open again if fluid was injected into the vein with moderate pressure.

6. In longitudinal wounds of the veins can the same method of using clamps be resorted to?

Answer.—Yes.

In conclusion, the writer cites seven cases of vein wounds which were treated in the Augusta Hospital. Two were injuries of the vena subclavia, one of the vena axillaris, three of the vena jugularis communis, and one of the femoral vein.

In every case the clamps were kept on for twenty-four hours. There were no after-bleedings, and the circulation was unchanged, so it could be taken for granted that the calibre of the vessels was unchanged.

In the discussion which followed DR. BARDELEBEN called attention to the fact that where the vein had been exposed for some time the use of clamps would endanger its nourishment, and in such cases double ligaturing should be practised.—*Berlin. Klin. Wochenschrift*, 1887, No. 19.

CAUSE AND EFFECT OF EXCESS OF FAT IN HUMAN MILK.

Dr. Zalêski, of Dorpat, publishes a case in the *Vrach* which bears out the well-known doctrine that a peasant wet-nurse should not be made to change her habits and her food for those customary among persons belonging to the wealthier classes of society. A baby 4 months old was brought to Dr. Zalêski with a history of diarrhœa and an emaciated appearance. The wet-nurse, a peasant woman, who had been accustomed to live on black bread, potatoes, and very small quantities of milk and cheese, with no alcoholic liquor, was suddenly promoted to a rich and highly nitrogenous diet, consisting of quantities of meat and eggs, with at least two bottles of beer a day. Samples of the milk were analyzed. By Dr. Zalêski's advice her diet was changed so as more nearly to resemble that of her peasant home, the beer was stopped, and she was given some light manual labor to perform. At the end of a fortnight a great improvement had taken place. Her milk was again analyzed. The mean results in the two cases showed that there was but little difference in most of the constituents. The lactose, however, had increased from 4.40 to 5.46 per cent., and the fat had decreased from 6.29 per cent. (which was the high figure denoting the proportion of fat in the first sample) to 3.97. Dr. Zalêski goes very fully into the literature of the subject, and gives analyses by many other observers. The conclusion to which he comes is that an excessively high percentage of fat in the milk, so far from being beneficial, is actually prejudicial to the health of the child, and that a highly nitrogenous diet tends to produce excess of fat, and, to a smaller extent, an excess in the saccharin matter in the milk.—*Lancet*, November 26, 1887.

IODINE TRICHLORIDE AS A DISINFECTANT AND ANTISEPTIC.

A long article appearing on this subject in the *Berliner Klin. Wochenschr.*, No. 40, has been analyzed as follows by Dr. E. J. Edwards in the *London Medical Record* for November 15, 1887: Both carbolic acid and corrosive sublimate are poisonous substances, and cannot be used freely in surgery. Chlorine-water, again, has an abominable smell, and the gas given off has an injurious effect on the respiratory organs. Some compound of chlorine is desired which is less poisonous than its metallic combinations, but which might give off chlorine freely under the proper conditions. Such a compound Dr. Langenbuch finds in iodine trichloride.

Iodine trichloride has the formula ICl_3, and one hundred parts contain 54.39 of iodine and 45.61 of chlorine. It is obtained by leading dry chlorine gas into iodine until it is converted to a crystalline substance of a beautiful yellow color (closed glass tubes, each containing one hundred grammes of this substance, are prepared for sale by Herrer Scheering, Berlin, Grüne Apotheke, Chausséestrasse). It is very volatile, of penetrating stench, and provokes tears and coughing. It easily dissolves in water, forming a fine mahogany-colored fluid, which undergoes very little alteration if kept in yellow flasks, protected from light. This fluid gives the iodine reaction with starch. On exposure to the air, and especially when in contact with organic bodies, two atoms of chlorine are given off and iodine monochloride is left. This also undergoes changes, so that iodine and chlorine are given off in the nascent condition and hydrochloric and iodic acids are formed, the latter having well-known oxidizing powers. The property which iodine possesses of furthering the chlorination of organic bodies depends upon the formation of iodine trichloride.

For surgical purposes a solution of 1 part of iodine trichloride in 1000 or 1500 parts of water was used. Such a solution, without evil effects even when applied to the abdominal cavity, is equal to a four per cent. solution of carbolic acid, or a sublimate solution of strength 1 in 1000 or 2000. The above solution smells of iodine and chlorine, the iodine odor predominating. The smell is not so strong nor so persistent as the odor of carbolic acid or of chlorine-water, and a little ammonia readily frees the hands from it. In the dispensary a ten per cent. solution in distilled water in yellow flasks is convenient.

Iodine trichloride cannot be pronounced non-poisonous,—every disinfectant attacks organic life. But Dr. Riedel, at the author's request, has made examinations on this subject, and his results may be found in the recent *Arbeit. aus dem Kaiserl. Gesundheitsamte*, vol. ii., Parts iii.–v. They are to this effect: "That experiments on rabbits on the introduction of iodine trichloride by intravenous, intra-peritoneal, and subcutaneous methods, unlike similar experiments made with carbolic acid and bichloride of mercury, give no reason to fear any poisonous action from the use of that substance in surgical practice." The author has always found it harmless in his ex-

tensive clinical use of this disinfectant. But to obtain a precise idea of the desirable strength for use, Dr. Riedel made investigations on its action on bacteria with the following results:

1. Iodine trichloride, in watery solutions of even 1 in 1000, quickly kills resistant bacillary spores. (Solutions in alcohol or oil have no effect.) This action far exceeds that of carbolic acid, and comes next to that of sublimate solution among the disinfectants.

2. In its action on spore-free bacilli and on cocci, a solution of strength 1 in 1000 corresponds to a three per cent. solution of carbolic acid, or nearly so.

3. The antiseptic properties of iodine trichloride in preventing the development of micro-organisms in wounds are shown by applying a solution (of 1 to 1200 aq.) to nutrient gelatin.

Operation wounds in the author's wards are no longer treated with carbolic acid or sublimate, but with "the trichloride" exclusively, and to the satisfaction of every one. Gauze or wood-wool impregnated with "trichloride" is used, the sponges are squeezed out of it, the operator's hands are soaked in it. As to the amount of iodine reaching the system,—the chlorine may be disregarded, as at once forming HCl, and combining with alkalies,—supposing four-fifths of the amount used (about a litre) to be removed by sponges, then of the original gramme of trichloride, only about .075 gramme (1 grain) of iodine can reach the circulation, for some of it volatilizes. But the daily maximal dose of iodine, when used internally, is .2 gramme (3 grains), an amount three times as large. The amount of sublimate absorbed, when 1500 cubic centimetres of a solution of strength 1 in 2000 aq. are used, is half as much again as the maximal daily dose; and if the same quantity of a three per cent. solution of carbolic acid be used, the amount absorbed is thirteen and a half times the maximal daily dose (!). Taking the latter as the unit, these proportions are ⅓, 1½, 13½; taking it as 6, they are 2, 9, and 81. Moreover, Riedel showed that thirty times more trichloride solution (1 to 1000) than sublimate solution can be used on rabbits, either subcutaneously or intra-peritoneally, without injury. The maximal dose of iodine in the German Pharmacopœia is, moreover, far below what the system will tolerate. Hundreds of major operations have been performed with the use of iodine trichloride in the author's wards, and perfect satisfaction has resulted. In one case of laparotomy for a tumor connected with the liver, the abdomen was reopened some hours after the operation on account of severe internal hemorrhage, the peritoneal cavity sponged out with sponges soaked in trichloride solution, and the bleeding vessel found and secured, yet the patient made a good recovery, without any peritonitis, or any signs of iodine action on the system. Other interesting cases are described,—*e.g.*, artificial anus, cancer of pylorus, etc.

Iodine trichloride is not a complicated chemical compound, but simply a loose combination of two volatile elements, which are evolved in the nascent condition when that substance is used. It is an energetic disinfectant, is not poisonous, and does not cauterize.

Finally, a few words are added on its general use. A spoonful of the solution taken every two hours or so quickly relieves dyspepsia depending on bacterial influence. It is also injected with benefit in cases of gonorrhœa. Rubbed into the skin every two hours, or frequently, it cures many skin-diseases; notably, one case of old psoriasis was cured altogether by this simple procedure. In fact, the uses of this substance are still undeveloped, both as regards surgery and hygienic medicine, and Dr. Langenbuch warmly recommends further trial.

A NEW ARTIFICIAL ALKALOID.

Chemical synthesis has constructed a new alkaloid with the name of oxypropylendiisoamylamine. It is produced by the action of the hydrochloride of propyl upon diisoamylamine, and forms an oily colorless liquid, soluble in alcohol, ether, and fatty bodies, but very little in water. The salts are very soluble. The physiological and therapeutic properties of this body have been investigated by E. Louïse. The toxic dose for a dog is 2 decigrammes, and for a man weighing sixty-five kilogrammes 13 grammes. On the nervous system it acts something like atropine, but its chief feature consists in the production of epileptic seizures of two kinds. In moderate doses this alkaloid may be considered as a powerful cardiac tonic, and an energetic stimulant of the circulation and cerebro-spinal centres. In its action on the heart it approaches atropine, paralyzing the inhibitory apparatus and heightening the action of the accelerating nerves. It does not influence the cardiac muscle-fibre or the

intra-cardiac nervous system. Probably it excites the medullary moderating centres of the heart. The cortical representations of the vagus centres are also acted upon, and it may be that this double action accounts for the remarkable augmentation of the intra-vascular pressure and the marked elevation of the temperature of the body in cases of acute intoxication.—*Lancet*, November 26, 1887.

A TEST FOR SACCHARIN.

Since saccharin is gradually coming more and more into commerce, it is high time that we should have discovered an accurate test for the same, since this sweet-tasting drug will doubtless be soon used in the manufacture of various "foods" and table delicacies.

The solubility of the drug in ether and the possibility of changing the sulphur which it contains into sulphuric acid, cannot be looked upon as sufficiently certain reactions. Recently C. SCHMITT (*Rep. Anal. Chem.*, 1887, 438) writes of a new test, which is undoubtedly very accurate. His method, which is based on the fact that by means of molten etching soda saccharin may be changed into salicylic acid, is as follows:

The test was first made with wine, which contained a trace of saccharin. 100 c.c. (4 oz.) of the strongly soured wine should be well shaken up with a 50 c.c. (2 oz.) mixture of equal quantities of ether and petroleum ether.

This operation should be repeated three times; and, as soon as the fluids have separated, they should be filtered. The three products should then be heated until almost dry, after the addition of some soda lye, in order to prevent sublimation. The residue should be heated for some time (half an hour), in a flat porcelain or silver dish, at a temperature of 250° C., and then dissolved in water.

The solution, supersaturated with sulphuric acid, should then be filtered, and the salicylic acid which has formed may be separated from the mixture by means of ether. This product should then be heated until dry, then taken up with a little water, and treated with a few drops of sesquichloride of iron. Should the wine have contained any saccharin, then the product will immediately assume the well-known beautiful violet-red color. In this even less than .005 per cent. of saccharin was easily traced.

Naturally, before this test should be applied, it is necessary to ascertain that the wine contains no salicylic acid.

The same method is equally applicable to any preparation which may be suspected of containing saccharin.—*Le Progrès*, Geneva, September 20, 1887.

A FEW FORMULÆ FOR IODOFORM.

DR. HOWARD, in *Journal de Médecine de Paris*, gives a list of useful formulæ for iodoform, from which we quote the following:

For syphilitic sores:

℞ Iodoform, 100 grm. (℥iii¼);
Thymol, 200 grm. (℥viss);
Sacch. lact., 1 grm. (gr xvss).

This powder should be well mixed and ground up. At first it should be dusted over the sore two or three times daily. Later (in four or five days) one application daily will be sufficient.

For herpes, a mixture of

Iodoform, 4 grm. (℥i);
Ol. eucalypt., 15 grm. (℥iv.);

should be applied two or three times daily.

In granulated inflammation of the eyes the author has used the following formula with great success. The powder should be dusted into the eye by means of a camel's-hair brush:

℞ Iodoform, 1 grm. (gr. xvss);
Sacch. lact., 5 grm. (℥iss).

Chancres, orchitis, etc., may be dressed with the following salve:

℞ Iodoform, 4 grm. (℥i);
Balsam. peruv., 8 grm. (℥ii);
Vaselin. flav., 40 grm. (℥iss);
Ol. menth. pip., gtt. viii.

The following salve will be found of great value in burns:

℞ Iodoform, 4 grm. (℥i);
Extr. conii, 2 grm. (℥iss);
Acid. carbol., .05 grm. (gr. viii);
Unguent. rosat., 30 grm. (nearly ℥i).

HYPODERMIC USE OF ERGOTIN.

In very many cases where ergotin is used hypodermically the injection causes considerable local irritation, which takes the form of painful swelling and inflammation of the spot punctured. To get over this difficulty, DR. BUMM, of Würzburg (*Centralb. für Gyn.*, No.

28, 1887), recommends a number of methods which were frequently applied practically with good results, and which undoubtedly deserve our attention. First, he never injects into the skin of the abdomen, as he claims that this is totally unsuited for it. The injection should invariably be made in the nates. Injections of calomel and sublimate are also always made here, and cause but slight pain, whereas, if these drugs were injected into the skin of the abdomen, the irritation and pain would be considerable.

In experiments on rabbits, the author found that when ergotin was injected directly into the muscles entire absorption occurred in twelve hours, whereas when the drug was injected into the cutis, or into the subcutaneous layer of fat, it took three or four times as long for it to be absorbed, and the pain caused by the injection was greatly increased.

The author considers a solution of the secale extract of ergotin to be the best form in which the drug can be used for an injection. As this extract is treated two or three times with alcohol, it is cleansed from all inactive properties. The solution must not be concentrated. Dr. Bumm used a five per cent., or, at the highest, never stronger than a ten per cent. solution, of which, when immediate action was desired, he would make two or three injections.

Dr. Bumm further states, that in order to counteract the painfulness which an injection of the secale extract alone might cause, on account of its strongly acid reaction, he neutralizes the solution by an addition of soda, which addition, however, will not cause any other noticeable effect.

THE PHYSIOLOGICAL ACTION AND THERAPEUTICAL USE OF SALOL.

Dr. Lombard reports a series of researches on this subject (*London Medical Record*, November 15, 1887), in which the drug was administered simply rubbed down in distilled water and introduced into the stomach of animals through an œsophageal tube, but a much better preparation is the emulsion in oil. The observations comprise experiments on rabbits, dogs, and on the healthy human being. The first result noticed was a lowering of the temperature; this occurs rather suddenly in about a quarter of an hour after its administration. The drop is not proportionate to the dose of the drug, for when once a certain reduction of temperature has been obtained, subsequent doses have a very slight influence. If the dose be larger than necessary, the surplus either remains without effect or passes away in the motions. The same limitation applies to its effects on respiration and circulation. Salol has no toxic effects. Whatever the dose administered, no ill-effects are produced. Its action on respiration is very marked. Within ten minutes the number of respirations per minute were doubled, while their depth was diminished. The latter phenomenon persists long after the frequency has returned to normal, which usually takes place in a short space of time. The action on the circulation is so little marked as to render it unnecessary to discuss. It is suggested that the comparative inertness of larger doses of the drug is due to its being decomposed into salicylic and carbolic acids by the pancreatic juice, so that its activity depends more on the quantity of the latter than on the amount of the drug. This assumption is based on the fact that if the pancreatic duct be tied, and the juice cut off from access into the intestines, the drug remains without effect. In pathological conditions, therefore, where the quantity of pancreatic juice is increased or diminished, the physiological action of the drug will vary accordingly. Salol is practically insoluble in water, but is slightly soluble in all organic fluids of an alkaline reaction. In rheumatism it was administered in doses of from 4 to 6 grammes (60 to 90 grs.) for adults, and 2 or 3 grammes for children. It is best given in an emulsion with gum, syrup, and almond oil. The result of a series of sixty observations tends to show that salol exercises a powerful calming effect on the pain of acute rheumatism, but the somewhat extravagant claims put forward on behalf of the drug in the treatment of this disease were not borne out. Its effects, however, are prompt. Within two hours after its ingestion the pain subsides and a condition of relative comfort supervenes, but, as a general rule, the symptoms return in a few hours as severe as before, unless the patient be kept under its influence. The marked if evanescent effects of the drug make it popular with patients, who see in it a means of obtaining at any rate a temporary relief from their sufferings. The difference between the influence of salol and that of the salicylate of sodium consists in the more persistent relief afforded by the latter, even after its administration has been suspended. At the same time, salol is exempt from most of the unpleasant consequences which some-

times follow the use of the salicylate, and for this reason the employment of salol may be preferable in subacute attacks of rheumatism, and wherever the use of the salicylate is contraindicated. As an antipyretic its action was practically *nil*.

THE USE OF SUBCUTANEOUS APERIENTS IN DOMESTIC ANIMALS.

DR. ELLENBERGER (*Arch. für Wissenschafte u. Pract. Tierheilkunde*, 1887, viii.) has recently made a series of experiments with thirty-one different drugs with reference to their value as subcutaneous aperients. The animals experimented upon were horses, sheep, dogs, and rabbits.

The author states that in veterinary practice he has found, besides physostigmine, which is so highly recommended by Diekrrhoff, that pilocarpine is also a most excellent subcutaneous aperient. This, he considers, is due to its property of so actively increasing the secretions of the bowels. Muscarine also proved itself to be a valuable subcutaneous aperient. It was, however, observed that Gehe's muscarine was far more active than that prepared by Merck.

In some cases the author considers a combination of pilocarpine, muscarine, and physostigmine advisable; as the two first named tend to increase the secretions, while the latter increases the peristaltic movement.

Aloïn acted with uncertainty, and caused a painful swelling of the place punctured.

Podophyllin and podophyllotoxin proved to be very poisonous, and caused paralysis of the extremities, of the vaso-motors, and of the bladder, accompanied by extreme weakness and occasional paralysis of the bowels. Further, podophyllin caused an œdematous and painful swelling of the spot punctured. Small doses of nitropentane* had no effect, larger injections were laxative, but also proved to be very poisonous. Colocynthin acted but very slightly on the bowels. It caused, however, considerable swelling and suppuration of the punctured spot.

The action of colocynthidin (citrullin) was very uncertain. The injection of very small doses of nickel-salts into the skin of the abdomen is said to have the power of greatly increasing the peristaltic movement. In most of the author's experiments, however, this result was not observed.

Cascara sagrada and bismuthum citricum ammoniatum were without action on the bowels, but locally they were extremely irritative.

The following drugs also proved to be without any laxative properties: extractum colocynthidis, leptandrin, babtisin, hydrastinum hydrochloricum, extract. taraxaci, convallarin, and convallamarin, euonymin, and jalapin. Acidum cathartinicum had a decided laxative action, but could not be used as a subcutaneous injection, as it was such a powerful local irritant.

Extract. colchici had no marked effect on the bowels, but could not be used anyhow on account of the severity of its actions. The same may be said of nicotine.—*Centralblatt für die Medicin. Wissenschaft.*, October 1, 1887.

* [Nitropentane is a liquid which is isomeric with nitrite of amyl, and which is said to be present to a very slight extent in the commercial nitre of amyl. According to Schädel the inhalation of ten drops of it by man produced no peculiar symptoms, but in the lower animals prolonged inhalation produces epileptic convulsions with dilation of the pupil.—EDS.]

RADICAL CURE OF HERNIA.

At a recent meeting of the Medical Society of London, MR. BOWERMAN JESSETT (*Lancet*, December 3, 1887) read notes of two cases of "Radical Cure of Hernia." The first case was a man, aged 57, a beadle, who had a double scrotal rupture for twenty years. An incision two inches in length was made over the external abdominal ring, the sac was exposed and separated from the surrounding structures as high as the internal ring; it was then opened and some omental adhesions detached. The neck of the sac was twisted and tied with a ligature of silk-worm gut, which was first made to transfix it, in order to prevent the possibility of slipping. The body of the sac was cut off and the ligatured stump fixed in the external ring, the pillars of which were sutured together. This served the double purpose of effectually plugging the ring and of preventing the possibility of the stump retracting from the ligature around it. The same procedure was carried out on the opposite side, and the patient made a speedy recovery, being enabled to return to his work, wearing a light truss as a support. The second case was one of large femoral hernia in a woman of six months' standing. The sac was exposed, a large mass of omentnm removed, and its stump returned to the abdomen. The body of the sac was then detached, the neck twisted, transfixed, ligatured,

and fastened in the crural opening. The method was advocated as being less painful and dangerous than that adopted by Mr. Wood, and preferable to obliterating the sac by the injection of irritant fluids. The importance of detaching the sac as high as possible, of opening it before applying a ligature, and of fastening the stump in the wound, was insisted on.

MR. BERNARD PITTS said that in two of the cases he had operated on there was a tendency to relapse. After operation patients were enabled to wear a truss with greater comfort.

MR. WALSHAM had operated on many cases, but had only had one relapse, a case of large umbilical rupture. He advocated entire closure of the pillars by suture as being preferable to blocking the ring with the pedicle.

THE HYPNOTIC ACTION OF BOLDIN.

It has been known for some time that the glucoside which is contained in boldo-leaves, and which is called boldin, had hypnotic properties.

Recently French physicians have been experimenting largely with the drug. Their results have been summarily stated by DR. JURANVILLE in an extensive work on the subject.

According to Dr. Juranville, boldo, or the glucoside boldin, is superior to any other hypnotic or narcotic (such as chloral, opium, etc.). It is easily taken, and is unaccompanied by any disagreeable symptoms. Indeed, the author asserts that its use increases the appetite and greatly strengthens the patient. Doses of 5 to 10 grammes (77 to 154 grains) have been given daily without causing any evil results. The sleep produced by the drug is similar to natural sleep in every respect; in this respect the drug is superior to all other hypnotics. The respiration becomes regular and quiet. Excited patients, suffering from hysteria and other nervous complaints, who for a long time have been unable to sleep, sank into a most refreshing and tranquil sleep under the influence of boldin.

The amount of the glucoside contained in boldo-leaves is about three per cent.

The drug may be given in capsules, in doses of .2 gramme ($3\frac{1}{16}$ grains), or, as an injection, of 100 grammes of water ($3\frac{1}{4}$ ounces) and 5 grammes (77 grains) of boldin. —*Le Progrès*, November 5, 1887.

Reviews.

CYCLOPÆDIA OF OBSTETRICS AND GYNÆCOLOGY. Vol. VIII. DISEASES OF THE OVARIES. By Dr. R. Olshausen. Thirty-six fine wood engravings. Vol. IX. DISEASES OF THE FEMALE MAMMARY GLAND. By Th. Billroth, M.D.; and NEW GROWTHS OF THE UTERUS, by A. Gusserow, M.D. One hundred and five fine wood engravings. Edited by Egbert H. Grandin, M.D., etc.

New York: Wm. Wood & Co., 1887.

As the several volumes of this Cyclopædia appear, each one shows more plainly than its predecessor the thorough and valuable character of the work as a whole. Vol. VIII. covers ground only incidentally reached before, and though a charge of repetition may be brought against the work, yet the repetition is never that of the same author, but of different authors going over the same field. Vol. VIII. contains chapters on "Absence, Excessive Number, and Rudimentary Development of the Ovaries," "Malpositions," "Descent," "Neuralgia," "Hyperæmia and Hemorrhage of the Ovary," "Acute" and "Chronic Oöphoritis and Perioöphoritis," "Simple and Proliferating Cystopapilloma," "Rare Forms of Cystic and Ovarian Tumors," "Hystogenesis of the Tumors," "The Fluid of Cystomata" and "Clinical Consideration of Cystomata," "Complications with Pregnancy and Labor," "General and Differential Diagnosis of Cystomata," "Diagnostic Puncture and Incision," and a number of chapters devoted to the operations for the removal of ovarian cystomata, in which each step is detailed with the most careful minuteness. The chapters on the "Condition of the Patient" and "Condition of those who Recover" are of the greatest interest, and contain much original research and observation. A special chapter on "Castration" discusses the propriety and results of this "new operation in Surgery."

Vol. IX. of the series meets a want often felt of a complete treatise on the subject of the female mammary glands. As is necessary, this volume is profusely illustrated, and with generally creditable wood engravings, and will prove of great use to the practitioner as a book of reference. The second part of the volume, on "New Growths of the Uterus," is wisely incorporated with Part I., forming an exceedingly valuable whole. The author's classification of uterine tumors comprises, first, "Neoplasms which start in the proper substance of the womb, and are made up of connective tissue and muscular fibres, or

both." These include fibromyoma and myxoma and sarcoma. Second, "Neoplasms which originate in the mucous membrane of the uterus, and are composed largely of epithelium," embracing adenoma and certain polypoid growths, papilloma and carcinoma. These are exhaustively studied in this volume.

Vol. X. is on the subject of "Diseases of the Female Urethra and Bladder," by F. Winkel, M.D., etc.; and "Diseases of the Vagina," by A. Breesky, M.D., etc., with ninety-nine fine wood engravings.

The chapter on "Examination of the Female Bladder and Urethra" gives us the latest methods of dilatation and examination; the question of visual inspection of the bladder. Concerning this the author says, "But beautiful as may be the effect of lighting up the vesical mucous membrane in this manner" (Rutenberg's), "it is questionable whether or not there is danger in it." In the inflation air may enter the ureters, and reach the pelvis of the kidney, setting up trouble; but practically in the author's cases it has done no harm, and he pronounces it "absolutely harmless" and "a valuable addition to our means of diagnosis." As to the necessity for viewing the bladder, the author feels convinced of its usefulness, if we would "obtain a clear picture." Thus far he has not been able to see the orifices of the ureters with his mirror; but with small sponges or brushes he has been able to "apply medicaments directly to a diseased spot without at the same time involving all the rest of the organ." As for the after-effects,—bad effects of dilatation,—he says, "I have often noticed a burning pain and dysuria, and once a distinct vesical catarrh after these examinations," but washing out the bladder for a few days with Hegar's funnel relieves this entirely.

Two excellent chapters are given on "Abnormal Shape and Position of the Urethra" and "Disturbances of Nutrition of the Female Urethra," respectively. In the treatment of urethral catarrh in the female, the author recommends, when there is much pain and secretion, ice in the vagina, urethral suppositories of belladonna or hyoscyamus, leeches to the anterior vaginal walls, as recommended by Scanzoni. For a quick cure the solid stick or the lapis mitigatus, drawn through the whole length of the canal several times. Iodoform bougies can be used. Internal treatment the author thinks can usually be omitted, but a bland diet, enforced with quinine and iron, in anæmic subjects.

The author recognizes a true neuralgia of the urethra. "Malformations of the Female Bladder" are very carefully discussed. "Injuries to the Bladder" forms a lengthy, well-written, and profusely illustrated chapter, which embraces the operative treatment of vesico-vaginal fistulæ. "Derangement" and "Neurosis" and "Foreign Bodies in the Bladder" are the topics of the three concluding chapters.

The second half of the volume is devoted to "Diseases of the Vagina," and compares favorably with the first part in its careful study of the conditions and diseases with which it is concerned. E. W. W.

ON THE PATHOLOGY AND TREATMENT OF GONORRHŒA AND SPERMATORRHŒA. By I. L. Milton, Senior Surgeon to St. John's Hospital for Diseases of the Skin, London.
New York: Wm. Wood & Co., 1887.

The author tells us that he has condensed much of the material of his earlier editions, added much new matter, and, altogether, aimed at giving us a practical, sound work,—giving us treatment which has stood the test of experience, and discarding and condemning without mercy, when found wanting in virtue, the many procedures and therapeutic agents which have had passing notoriety from time to time. The author, for reasons which he gives us in detail, believes that until about the beginning of the eighteenth century "gonorrhœa was rare, and only an occasional visitor in Western Europe." Shakespeare does not mention it, nor does Sydenham write concerning it like a true observer.

The author believes but little in any genesis of the disease other than the usual one from a pre-existing contagion. Gonorrhœa alone produces gonorrhœa. He admits that the various causes mentioned by other authorities, as leucorrhœa, ulceration of cervix, presence of menstrual discharge, etc., may possibly produce a slight urethritis, but holds that such attacks are short, mild, tend to spontaneous cure, and never exhibit the complications of chordee and orchitis.

The author differs from the numerous sanguine authorities who profess to consider gonorrhœa a very simple matter and readily cured in a week or ten days. With rare exceptions, under the best management, three or four weeks and not seldom as many months elapse before cure. In regard to the after-results of the disease, he questions as scarcely serious the grave prognosis of Dr. Noeggerath, of New York. He says (p. 42), "It does not seem to have struck Dr. Noeggerath

that, had his facts been correct, gonorrhœa would have long ago depopulated every country into which it had penetrated;" for, according to our author, an analysis of Dr. Noeggerath's statements—which he gives, with his own deductions—leads him to this conclusion. In short, he is not a believer in latent gonorrhœa at all, and believes the consequences of infection in the female are by no means uniformly disastrous.

As to the peculiar micrococcus which causes gonorrhœa he says, "Tested by the results of practice the theory breaks down, as antiseptics have no particular control over the disease." This seems a rather summary way of disposing of a very important matter, and is open to two lines of criticism: first, as very recent observations seem to show, the microbe of gonorrhœa very early places itself too deeply in the tissues to be reached by the antiseptics usually employed; or, second, that, used early, antiseptic treatment, notably that of the injection of bichloride of mercury, does in many hands—not in all—yield astonishingly good results. No ready method, the author thinks, can tell us whether the case before us will prove long or short, simple or severe, and it is folly to attribute severe attacks to scrofulous constitution or gouty diathesis.

The great puzzle, our author thinks, among the great number of vaunted cures is to find some substance in the wide domain of therapeutics which is not or has not been suggested as a cure for gonorrhœa. The author, in his love of sarcasm, is too sweeping. He condemns Swediano with a passing sneer for advising his patients not to urinate out of doors and in a cold wind,—advice which is simply invaluable. The charlatan of our forefathers' day required a few days to effect a cure, while "now we have remedies which cure the disease in nearly ninety per cent. of the cases at a single sitting," and leave the profession at a "loss to know why we ever meet with bad gonorrhœa at all."

But there are some fundamental principles of treatment. The surgeon at the outset of his career has his mental bias established, the author thinks, by "some striking case of cure or failure." The exaltation of scientific experiment to-day, the author thinks, and the disposition to pass by the teaching of experience, prevents any real progress. The author, one may readily see, is a true conservative,—of the straitest sect. In the history of the treatment of gonorrhœa, as the author gives it to us, we may read how Sydenham, Moyle, Marten, Turner, Cockburn, Asbruc, and others treated it, with the author's running commentary exhibiting considerable humor. How the author himself treats it we leave the reader to discover,—only adding that nowhere will one find a more complete and interesting treatise than the one before us.

The second part of the work is devoted to the "pathology and treatment of spermatorrhœa." This subject gives the author opportunity to display his unique literary gifts fully. The book is controversial: he is arguing with his audience of readers against the assertions and opinions of eminent authority,—often the eminent authority seems to the audience but a straw man or simple rag baby, but he is demolished by the author with complete satisfaction.

All these eminent authorities have incurred the animosity of the author on account of their neglect and avoidance of the subject of the volume. Evidently he has been stung to the quick more than once, as he saw himself classed with charlatans and empiric professors of the treatment of venereal disease. The kind of barbarity, now almost inconceivable until a few weeks ago, which chased the leper from society, burned the witch and maniac, refused to treat phagedæna because seated on the genitals, has "changed its outward semblance." The profession have "attacks of virtuous horror" at the mention of spermatorrhœa, and would "ostracize alike the patient and the medical man who so far forgets the dignity of the profession as to prescribe." There are some who are not so intolerant; but, alas! these err again by considering spermatorrhœa "as existing only in the imagination" and as a "mere phantom." Both these classes of opponents the author attacks and refutes, and in doing so has produced an excellent monograph on the subject. Though the author holds strong opinions of his own, and differs from generally-received authorities in many ways, his views are derived from observation and common-sense reasoning from personally observed facts. While he claims no remarkable success, one can see, on reading his reported cases, that his treatment is sensible, reasonable, and evidently devised by an active mind.

Many of his statements have met with much antagonism, notably one made in his previous editions,—viz., that continent young men, continent up to twenty-seven or twenty-eight, will probably be impotent after that age. This, with some modifications, he still holds. As a curious fact he notes what healthy, fine children are begotten by almost impotent

fathers. Throughout the book there is always the sparkle of his ready wit, and his pages are extremely interesting on that account; and while handling a delicate subject without prudery, he is far from following the example of those writers who evidently revel in the inherent filth of their subject. E. W. W.

MEDICAL AND SURGICAL MEMOIRS, CONTAINING INVESTIGATIONS ON THE GEOGRAPHICAL DISTRIBUTION, CAUSES, NATURE, RELATIONS, AND TREATMENT OF VARIOUS DISEASES, 1855–1866. By Joseph Jones, M.D., etc. Vol. II.
New Orleans: Jos. Jones, M.D., 156 Washington Avenue, 1887.

The first volume of this work was published in 1876, and did not come under the reviewer's notice. The present volume is a very extensive work of thirteen hundred and forty-eight pages, very profusely illustrated, and dealing principally with the author's own investigations on the subjects of endemic, epidemic, infectious, and contagious diseases; malarial fevers; comparative pathological anatomy of malarial, typhoid, and yellow fevers; indigenous remedies of the Southern States; albinism in the negro; Oriental leprosy; elephantiasis Græcorum and elephantiasis Arabum.

Perhaps no portion of the book will prove more interesting than the chapter on leprosy in Louisiana, with its profuse illustrations, and the author's detailed cases and histories. Yellow fever also can here be studied under the direction of a practical and experienced observer. The book is an immense mass of material, much of which is valuable, very much otherwise, and requiring considerable patience on the part of the reader if he would sift the chaff from the grain.

The author revels in autopsies and animal experimentation, and has, after his own manner, been evidently an active and zealous investigator, for no other word so fitly describes his work. His study of micro-organisms is of the widest range, and his reading and literary research are very extensive; in fact, to write such a book a man must be a prodigious worker, and in the present case has evidently been also an extremely busy and active practitioner.

The great value of the book lies in the chapters devoted to malaria in all its forms and to the effects of Southern indigenous remedies. These are all well illustrated, and their action carefully studied. There is an excellent chapter on "The Treatment of Rheumatism by Salicylates and other Remedies." The summary of facts relating to the properties and action of yellow jasmine will prove valuable, while the chapter on albinism in the negro race is both curious and interesting rather than of practical value. Of the value of the extended chapter on leprosy we can express no opinion, being by no means convinced that it is to be especially dreaded, or that it is ever likely again to become a scourge in the modern civilized world. E. W. W.

FOUR MONTHS AMONG THE SURGEONS OF EUROPE. By N. Senn, M.D., Ph.D., of Milwaukee, Wis., etc., being a series of letters to Dr. Chr. Fenger.
Chicago, 1887.

This is an exceedingly interesting and bright little pamphlet, detailing the writer's visits to the various noted surgeons abroad. Without revealing confidences, without throwing too much of a glare upon the daily life of celebrities, one can gather many facts concerning the subjects of his note of great interest and use. The personal appearance of the noted man, his surroundings, his manners, his method, his assistants, and the case he operated upon before the writer are all detailed. The style of the letters is colloquial, easy, and simple, and we think they were worth writing and preserving.

E. W. W.

PRACTICAL MICROSCOPY. A COURSE OF NORMAL HISTOLOGY FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By Maurice N. Miller, M.D.
New York: William Wood & Co., 1887.

The method of medical teaching in our colleges has materially changed during the past ten years, and in what may be termed practical instruction, both at the bedside and in the laboratory, is this change most evident. A necessity has, therefore, arisen for books of a nature essentially differing from those which were formerly given to the student. This want has not been neglected, and there have appeared in rapid succession good, bad, and indifferent works, having for their object the instruction of the beginner in the practical branches as taught in the different colleges. The above volume by Dr. Miller has been written, he says, "with a view of aiding the instructors and students of the laboratory classes which are under my direction." Our reading of Dr. Miller's book leads us to form a very favorable opinion of its merits, and we have found it to be fully abreast of modern microscopical teaching. A very commendable feature of the work is its simplicity in

the directions given to the student for the preparation of the various tissues and organs. Microscopic technique in the study of histology is undoubtedly most important, since no satisfactory study of any tissue or organ of the body is possible if its preparation for examination has been carelessly or improperly done, but it is often confusing to the beginner to know or select from many methods the one suitable for his purpose. This selection has been well made by our author, and the student cannot fail to do good work if he fully carries out the directions given in the book for preparing, cutting, and mounting sections. The descriptions of the histology of the organs and tissues are brief, lucid, and in every respect satisfactory for laboratory work. Indeed, we know no book more suitable for the beginner, and a systematic study of its contents, with a careful following out of its directions, in preparing sections for microscopic study, will certainly lay a good foundation upon which the further study of histology may safely rest. The illustrations are photographical reproductions made from pen-pictures, drawn by the author, and add much to the value of the book.

J. H. C. S.

THÉRAPEUTIQUE CHIRURGICALE CONTEMPORAINE. Par Albert Heydenreich, Professeur de Clinique Chirurgicale à la Faculté de Médecine de Nancy.

(MODERN SURGICAL THERAPEUTICS. By Prof. Albert Heydenreich.)

Paris: G. Steinheil, 1888.

Professor Heydenreich informs us, in his preface, that during the past three years he has contributed to the *Semaine Médicale* some of the results of surgical therapeutics, and that he now presents them in a collected form. The volume, however, is not simply a reprint of his contributions. It contains, he says, chapters that have not yet been published, and several articles, which have been previously published, have been rewritten. To the English medical student the term surgical therapeutics is apt to be confusing, and especially if he remembers the definition given by writers on therapeutics, who say, "Therapeutics is the science of the application of medicines to the cure of disease." Or, again, turning to a medical dictionary, he finds therapeutics defined thus: "The department of medicine relating to the application of remedies and the cure of disease." Now, if we accept the word medicine in its broad sense, in the latter definition,—that is, to include all connected with the healing art, whether medical or surgical,—then the term surgical therapeutics is quite applicable and its meaning clearly understood. In a word, surgical therapeutics is the whole treatment of a surgical affection, including operation, dressing, and medication, and such is the signification the author intends to convey by the title of his book.

Professor Heydenreich's work is divided into five chapters, which treat of affections of the neck and chest, of the abdomen, of the genito-urinary organs, of the extremities, and of the tissues in general. We do not propose to give a complete analysis of the author's work, but a few of the conclusions arrived at in several of the affections that are considered will give our readers some idea of the nature of the articles, and it is seen that the operations which are as yet not accepted by all surgeons are those which are the subjects of the writer's work. Thus, the intraglandular enucleation in cases of goitre is believed to be preferable to complete removal of the gland. He writes, its advantages are multiple, it is a rational operation, its performance easy, and its consequences not harmful. The conclusions arrived at in regard to extirpation of the larynx are, that it is an operation rarely necessary; that laryngotomy is more desirable when the neoplasm is so situated as to permit it; that a palliative tracheotomy should content one when the tumor is far advanced, or the patient advanced in age, or the general health will not admit a more radical operation. Pneumectomy, it is believed, should be as yet confined to experiments on animals, but pneumotomy, on the contrary, is thought may be performed with advantage in certain cases of abscess of the lung, circumscribed gangrene of the lung, and hydatid cysts of the lung. In cases of tubercular cavities of the lung this operation is not considered advisable. In cases of intestinal obstruction the following conclusions are given: If the obstruction is acute and its beginning sudden, laparotomy is indicated; while, on the contrary, if the course is slow and the beginning gradual, then an artificial anus is to be made. It is remarked, in reference to splenectomy, that it is an operation perfectly justifiable, if the affection is one which endangers the life of the patient, provided the cases are suitable. Thus, if the affection that demands the operation does not depend upon leucothemia, malaria, or any constitutional condition, the extirpation of the spleen is not considered more dangerous than other operations generally admitted as justifiable; for

example, hysterectomy. Cystotomy, when performed for the removal of tumors, is thought best done by the supra-pubic method rather than by perineal section. Castration in women is said to be a valuable operation, when applied to suitable cases, but it should not be abused. In certain metrorrhagias, symptomatic of uterine fibromata, and in certain genital atresias, that prevent menstruation, castration is considered a legitimate procedure. Perhaps it is also justifiable in severe and obstinate nervous affections, which are manifest during menstruation; but in these cases surgical interference is, only after most careful consideration, to be recommended. The opinion in regard to Alexander's operation for shortening the round ligaments is that no precise conclusions can yet be given, since it has not been sufficiently tested; but it is believed that it will prove advantageous in certain selected cases. Three different methods of treatment of fracture of the patella are considered,—viz., massage of the knee-joint, which is not thought advisable; puncture or aspiration of the joint, and washing it out with an antiseptic solution, as soon as possible after the injury, with compression of the joint and fixation of the fragments, is believed to be suitable for recent and simple fractures of this bone; suturing the fragments together is said to be indicated in cases complicated with a wound, and in badly-united fractures. In regard to the advisability of nerve-stretching two conclusions are given,—first, that nerve-stretching is not absolutely free from danger; and, second, the results are not always constant. In concluding our notice of Professor Heydenreich's book, we feel that, owing to the limited space at our disposal, full credit has not been given to him for the excellency of his work, therefore we advise all surgeons who wish to keep up with the advances made in surgical therapeutics to carefully read the book for themselves, and we are confident the time will have been profitably spent.

J. H. C. S.

Studie über das Allgemeine Traumatische Emphysem. Von Dr. F. Klaussner.

(General Traumatic Emphysema. By Dr. F. Klaussner.)

Munich: Gustav Himmer, 1886.

The above brochure by Dr. Klaussner on traumatic emphysema is a most exhaustive study of the subject, and he presents in an interesting manner all the information we have had upon this subject, besides much that he has himself investigated. Four divisions are made in his study of the subject: 1. General traumatic emphysema in men; 2. General traumatic emphysema in animals; 3. Experimental investigations upon living animals and the cadaver; and, 4. The clinical history of traumatic emphysema, which includes its pathogenesis, anatomy, symptoms and course, and treatment. From the investigations of Dr. Klaussner the treatment of traumatic emphysema is comprised under six heads: 1. Compression at the seat of injury in order to prevent further extension of the emphysema; 2. Enlargement of fresh punctured wounds, which tend to favor the formation of emphysema; 3. Paracentesis, drainage of the thorax, after resection of the ribs, with antiseptic precautions; 4. When the emphysema has extended, punctures, or, still better, numerous and large incisions, with antiseptic precautions, combined with methodical massage; 5. Tracheotomy, when the emphysema involves the neck, and there are symptoms of suffocation; 6. Medical treatment.

J. H. C. S.

Les Méthodes Antiseptiques de Pansement en Temps de Paix et en Temps de Guerre. Par le Dr. Jean Habart.

(Antiseptic Methods of Dressing in Civil and Military Practice. By Dr. Jean Habart.)

Paris: G. Steinheil, 1887.

The above book is a translation from the German by Dr. Fredk. Weiss, and presents in a convenient form the various substances used for antiseptic dressings, and the method of their preparation. In order to carry out the doctrine of antiseptic surgery, the fundamental principles of Lister are quoted as necessary to assure success. Disinfection of the part to be operated upon, of the wound and of the dressing; perfect control of all hemorrhage; careful suturing; perfect drainage; cleanliness, pushed to the utmost, have become the foundation of all antiseptic methods.

J. H. C. S.

Lehrbuch der Physiologischen und Pathologischen Chemie. In Zwanzig Vorlesungen für Ärtze und Studirende. Von G. C. Bunge, Professor der Physiologischen Chemie in Basel.

Leipzig: Verlag von F. C. W. Vogel, 1887.

In his lectures on physiological and pathological chemistry, the author has taken a ground which cannot be too strongly recommended. His lectures were delivered to medical students, and they admirably fulfil their purpose. In a text-book, or in lectures to

students, we must not look for a complete exposition of the subject in all its bearings. Such a work to the beginner would prove incomprehensible, and by the various more or less serious contradictions which such a work would necessarily detail, would only serve to confuse him. What the student needs is a dogmatic statement of facts which possess the greatest amount of probability. But more than this, he needs to have his interest so excited in his subject as to stimulate him to fill out the gaps of such a course for himself. It is with this idea ever before him that Professor Bunge has published his text-book on physiological and pathological chemistry. In addition to this advantage, which we have already alluded to and to which we might add the omission of a long list of analytical methods where one alone serves the purpose, the author has likewise pointed out the best method for extending a knowledge of this subject by copious references to original articles. By the study of original memoirs the student is alone able to keep abreast of the progress of science. Even if he committed a whole encyclopædia to memory his knowledge would be, in the constant progress of science, soon useless to him, but by acquiring a familiarity with current literature, the best means of keeping posted on the progress of science is acquired. We can cordially recommend Bunge's text-book as not only giving a readable and clear statement of the present state of physiological chemistry, but also in the manner indicated of enabling the student to extend his knowledge as much as desirable.

Correspondence.

BERLIN.

(From our Special Correspondent.)

Long before you receive this your readers will have read the telegraphic news of the dangerous aspect which the disease of the German Crown Prince has taken, and are no doubt well posted as to the minutiæ of the case.

It will be perhaps needless to state that this subject constitutes the centre of discussion in all circles, and, of course, principally in the medical world. In consequence of this a vast number of pamphlets, articles, and monographs have been very recently published on the subject of carcinoma. These articles have treated with the subject in all lights. First and foremost a series of publications have appeared which are of a rather polemic character, and deal principally with the physician who has had charge of the Crown Prince's case, Dr. Morell Mackenzie.

These articles have had a wide circulation, and have been quoted at length by the leading political journals, and I need only remark that the views and actions of Dr. Mackenzie are most severely criticised by medical circles in this country.

The German physicians who have been connected with the case—viz., Drs. von Bergmann, Gerhardt, and Tobold—have as yet not given any further opinion on the case. They are satisfied with seeing their original views substantiated after having been frequently and flatly contradicted. Their silent reserve contrasts brilliantly with Mackenzie's actions. He continues to publish through the English press all sorts of statements, the untrustworthiness of which may be easily seen and understood.

Many purely scientific articles have also been recently published on the subject of carcinoma, which cannot fail to be of interest to the profession.

Dr. E. Hahn has undoubtedly had a wider experience in operations on the larynx than any other practitioner in Europe.

At the last meeting of the Medical Society of Berlin, Dr. Hahn gave a most interesting account of his experiences in extirpation of the larynx on account of carcinoma. In fifteen different cases he partly or entirely excised the larynx. Of these fifteen patients only two are still living. Of a third he has not yet received news of the death, but the latest reports leave no room for doubt as to the ultimate fate of the case. One of the cases that still lives is that of a man who was operated upon seven years ago, and was at that time aged 67. The disease has shown no signs of returning, and the patient is enjoying perfect health.

The operation in this case was very severe and extensive. It included the entire coracoid cartilages, the greater part of the one thyroid cartilage and the entire other thyroid cartilage, part of the hyoid bone and the epiglottis. The other surviving case was one that occurred in the practice of Dr. Semon, and which was operated upon by Dr. Hahn whilst in London. The disease was still in its early stages, and a resection of only half of the larynx was rendered necessary. Concerning this case the speaker said he had but lately received news from Dr. Semon stating

that a slight protuberance or swelling had made its appearance at the seat of the old wound made by the operation, but up to the present time it was impossible to say whether this was merely a cicatrix or a return of the disease.

Dr. Hahn holds that the principal reason why the results of these operations should almost invariably prove so unsatisfactory is because the patient is not brought up for operation until the disease has reached a very advanced stage. Generally the prognosis of those carcinoma which are of a horny or cartilaginous character is more favorable than that of others. In both of the surviving cases operated upon by Hahn the disease had taken the form of carcinoma "keratodes." In such cases Hahn considers an operation more practicable than in others. In cases of soft carcinoma, which show symptoms of suppurating or breaking open, it is best not to attempt any operation.

Another article on the treatment of carcinoma of the skin comes from Professor Lucae, and appeared in the November number of the *Therapeutische Monatshefte*. In this article Professor Lucae speaks of the case of a man, aged 31, who, in the spring of 1880, suffered from a long and severe attack of otitis, which, in August of the same year, turned into a bloody discharge. At the same time the patient noticed a swelling in the right ear, which caused him great pain. The patient was operated upon with a wire loop and a sharp scoop, and the growth was cauterized with lapis, but all without avail.

When the patient came to Dr. Lucae a pale red, polypous growth was observed which completely filled up the entire cavity, and probably was attached to both the posterior and anterior portion of the oral passage. There was also a profuse, purulent, fetid discharge from the right ear. A portion of the growth, about the size of a bean, was removed with a sharp scoop, and sent to Dr. Carl Friedlaender, the eminent pathologist, who has only recently died. Dr. Friedlaender, after a careful examination, pronounced the growth cancerous (horn cancroid).

The tumor continued to grow, and the discharge was treated with diluted chloruretted water. From the 10th of January, 1881, three times a week, for fourteen days, Dr. Lucae treated the disease with a powder composed of equal parts of powdered herb. sabinæ and alumen ustum, which was blown into the ear-passage, which had previously been carefully cleaned.

The patient would not enter the hospital, neither would he attend the polyclinic. The powder was therefore given him to be used at home. This the patient, however, did very irregularly. Whereas during the use of the powder the growth ceased to increase in size, and the pain disappeared, yet as soon as its use was discontinued the growth would again increase, and the pain would return. The patient therefore returned to the use of the powder, although, indeed, he still used it without regularity.

On the 12th of October the tumor had disappeared entirely; the lymph-glands behind the ear, which had been greatly enlarged, were now no longer to be seen. The pain, as well as the difficulty in hearing, had also completely disappeared. On the 20th of May, 1887, recovery was found to be complete. Dr. Lucae considers that the recovery was entirely due to the use of the above-mentioned powder.

Of the greatest interest regarding the etiology of carcinoma is the discovery which was made in Leyden's clinic by one of his assistants, Dr. Scheurlen, who reported the same to the Society for Internal Medicine. The principal objects of his researches were ten mammillary carcinoma, which were taken directly from the operating-table, and which, without being cut open, and still covered by their surrounding fat, were wrapped in an antiseptic bandage and taken to the microscopic laboratory, where immediately inoculatory experiments were carried on. Further (although without such exact antiseptic precautions), a carcinoma of the womb, of the cervix, three metastatic carcinoma of the liver, and one carcinoma of the stomach were experimented with.

As a nourishing surface for the inoculations Dr. Scheurlen chose a serous pleuritis from which the fluid had been removed by puncturing. All those precautions were strictly adhered to which were observed by Koch in his well-known experiments. From every carcinoma at least twenty inoculations were made. Of these at least seven always took, often more; but it was very seldom that all the inoculations took. The symptoms were usually first observed on the third day after inoculation, sometimes even later, and frequently sooner. The whole surface of the serum was covered with a colorless membrane, which gradually became full of folds, and after some days, or even weeks, assumed a yellowish-brown color. Often little drops of water will be observed to be on the mem-

brane, which give a very dainty appearance to the cultivation. The growth is exclusively superficial; if the nourishing surface is dry, and the inoculatory puncture causes a split, then, of course, the growth will extend into the split. If the membrane be now subjected to a microscopic examination of high power, without any coloring-matter having been added, firstly short bacilli (1.5 to 2.5 μ long and .5 μ wide) will be observed, which, however, are not very noticeable; others will be seen which are equally as long, ovoid, brightly glistening, and of a greenish color, which, when very highly magnified and intently watched, show distinct movement. These bacilli are easily colored, and good pictures of them may be obtained by Gram's method. The spores are difficult to color. In order to make them plainly visible they require to be colored for half an hour to an hour in boiling aniline coloring-matter; they then should be steeped in nitric acid (1 to 3), and afterwards rinsed in water. They have a flat, ellipsoid form.

Up to the present time no positive proof of the disease has ever been determined by direct microscopic examination. Now, however, the bacilli, and especially the spores, colored in the above manner, are easily discernible by means of a high-power microscope.

They are very characteristic and not easily confounded with other micro-organisms. They lie mostly in heaps, as if the cell which contains them had been sprinkled with them. Once a cell was found that was completely filled with them. The bacilli may be also cultivated on agar, gelatine, potatoes, and in various fluid nourishing substratas.

Further, Dr. Scheurlen made extensive experiments on animals. He inoculated six dogs, four of which are still alive; two were killed for the sake of thoroughly examining the results of the inoculation. All the animals were females.

The bacteria which were used for inoculation were taken from a preparation of potatoes, in which they were nourished.

Two divisions of a Pravaz syringe of the fluid containing the bacteria were injected into the tissue of the mammary glands of the dogs. Inside of two weeks a swelling appeared, which, in some cases, reached the size of a walnut, of a rather soft consistency, the limits of which were indistinct. In a short time the swelling would gradually decrease, until it had reached the size of a hazel-nut or bean. It then became hard and tough. The tumor kept this size, except that in some cases it seemed to grow slightly larger.

One of the dogs was killed on the twenty-eighth day after inoculation, and another on the thirty-fifth day. The tumor was found to be very hard and imbedded in the fatty tissue of the mammary gland; it was not attached to the skin. It was not positively certain whether the tumor had started from a lymphatic gland or from the tissue of the mammary gland. Upon microscopic examination, greatly enlarged and granulated cells were found, which in part undoubtedly deserved the name of epithelioid. Next to these fat was seen, and cells undergoing fatty metamorphosis. It was clear, beyond all doubt, that a chronic inflammatory and degenerative process was going on. Microscopically the carcinom-bacillus was easily found, and was, of course, the same as had been cultivated. Upon the strength of this discovery, Scheurlen is, however, not in a position to state whether the bacillus found by him is the etiological cause of carcinoma or not.

Viewed from this point, the observations of other experimenters gain a new importance. They have placed carcinoma in the same line with other infectious diseases whose causes are due to a parasitic origin. Long ago Virchow called attention to the fact that the spreading of carcinoma seemed to be due to an inoculation of healthy tissue from the tumor itself.

This may be specially observed in carcinoma of the stomach and bowels, which grow from the mucous membrane through the tissues, which they lift up and then spread in a most remarkable manner; for the secondary tumors will not be found in the immediate vicinity of the original growth, but at some distance from it; sometimes in the vesico-uterine or recto-vesical cavities, or at the sides of the lateral vesical ligaments, as if some substance had dropped from the primary tumor and had been caught in these folds, and here formed a new tumor.

The opinions of Dr. Klebs are of a similar nature. He found carcinoma of the gums and tongue to be followed by carcinoma of the œsophagus and stomach. Klebs cites many similar instances.

Further, accounts have been published of cases where mere contact seemed to give rise to the formation of another tumor. Dr. Lücke tells of a case of carcinoma of the tongue which was on one side. Later, opposite to the alveolar process, a small carcinoma ap-

peared on the cheek on the exact spot where the tongue touched the cheek, the two tumors being separated by the healthy mucous membrane of the mouth. An analogous case was only recently brought to the attention of the Medical Society of Berlin by Dr. v. Bergmann. The patient had two carcinomas, one on the upper and one on the lower lip, just at the spot where the lips come in contact with each other in the middle. The carcinoma of the lower lip was three months old, whereas the other had only made its appearance five weeks since. The tumor on the lower lip when it first made its appearance was smaller than a pea. In about six or seven weeks it ulcerated, and the tumor on the upper lip began to make its appearance. Both growths had developed into characteristic carcinomas, and were about half the size of a hazel-nut. In this case the suspicion of the tumor on the upper lip having been caused by contact is well founded.

PARIS.

(From our Special Correspondent.)

The event of the month has been the yearly awarding of prizes by the Academy of Medicine, which took place on December 13, and was attended by the customary numerous and interested audience. Every year the academy has thus some ten thousand dollars to distribute in prizes, in consequence of bequests made at different times and for different objects. In some cases the subject is closely specified, in others only indicated in a general way, and in a few instances the award is left altogether to the discretion of the academicians. Of course some prizes are not won, and the amount stands over to the next year. This time twenty-five prizes were distributed, aggregating to over six thousand dollars, besides half a dozen gold and a hundred or more silver medals. As the Academy of Sciences is trustee for the award of several valuable medical prizes, the School of Medicine and the College of Pharmacy for a number of others, and several societies are equally favored, it cannot be said the healing sciences are left without encouragement in France.

The beneficial effects of hydrofluoric acid inhalations in phthisis have been confirmed by further experiments, and already several claimants have come forward to assert their rights to the priority of discovery. Such claims are of secondary importance. The main point is that the inhalations appear to act very successfully in most cases. Dr. Hérard, the chairman of a committee appointed by the Academy of Medicine to examine the question, has reported that hydrofluoric acid undoubtedly possesses remarkable antiseptic and antibacillary properties. Considering the parasitic nature of tuberculosis, the curative action of the chemical will readily be understood. It can even be said that the treatment was indicated beforehand, the main reason why it was not tried heretofore being the fear of the well-known destructive power of hydrofluoric acid. But the danger has been shown not to exist when the vapors are properly diluted. According to Dr. Hérard the following are the general effects of the treatment: One of the first is a return of the appetite, which becomes regular, and occasionally considerable. With good reason this symptom is considered most important, as no therapeutic agent will cure a patient unable to take nourishment. The vomitings, if there were any, soon cease, so do the nocturnal sweats, as a rule, but not always. The diarrhœa is less frequently and much less rapidly modified. The fever becomes more moderate. As a consequence of the whole the weight of the body increases. Regarding the more distinctly local symptoms of pulmonary consumption, the dyspnœa is one of the first to improve; the cough decreases in violence and frequency, thereby allowing the patient to enjoy better rest at night; notwithstanding the irritating nature of the fumes no hæmoptysis was observed. On the contrary, there is some reason to believe the treatment prevents a recurrence of former blood-spitting. The expectoration diminishes, and the sputa, from greenish-yellow and thick, assume the natural white and frothy appearance. Finally, the numbers of bacilli in the sputa decrease, and they sometimes disappear altogether. So far the outlook appears very favorable, but the conscientious chairman was obliged to confess that, while the symptomatic phenomena rapidly improve, such is not the case with the lungs themselves. There the progress is much slower, and it is doubtful if the treatment will be very successful in the advanced stages of consumption. In conclusion of a careful and painstaking investigation, he gave it as the committee's opinion that hydrofluoric acid inhalations have an undeniable therapeutic action when phthisis is not too far advanced, and that they are not dangerous, and easily administered, but should be combined with other internal and external medication and good sanitary conditions. As a consequence, probably, of the foregoing report, Dr. Ley is

now informing his brother practitioners that he has established in his clinic suitable closets which he places at his *confrères'* disposal for administering the inhalations to their patients and observing the progress of the treatment. Sufficient particulars of the process were published in the October number of the THERAPEUTIC GAZETTE.

The therapeutics, pharmacy, and botany of strophanthus are now engaging the attention of French professionals as much as they seem to have occupied our brethren across the Channel. Of the botany of strophanthus but little need be said. At a recent meeting of the Paris Society of Pharmacy M. Planchon, the director of the College of Pharmacy, and a high authority on materia medica, remarked that much uncertainty exists on the botanical character of *Strophanthus hispidus*. Scientists disagree on important points, and, considering the complex nature and evident adulterations of the article often supplied by commerce under the name of strophanthus-seeds, the professor thought it was safer to wait for more definite data before coming to a conclusion respecting the botany of strophanthus and its numerous varieties. The therapeutics of the drug, however, rest on firmer ground. Only it may be remarked that, although French scientists claim to have been the first to call attention to the poisonous properties of the seed, they admit they have been forestalled by others in the study of its physiological and therapeutical virtues. Of late they have been making up for lost time, but their investigations, as a rule, confirm only and add precision to the facts known in regard to the cardiac action of strophanthus.

Dr. Dujardin-Beaumetz, the other day, at a meeting of the Paris Society of Practical Medicine, gave it as his opinion that a good way to exhibit the drug is to give the French tincture, one part of the seed to five parts of alcohol, in doses of 12 to 14 drops, five drops of the tincture corresponding to one milligramme of extract. Of crystallized strophanthin, an active principle, experimented with by M. Catillon, the beginning dose is $\frac{1}{10}$ of a milligramme, equivalent to one milligramme of extract. The eminent therapeutist, speaking of the tincture, only remarked that two sorts are now made,—one green by Dr. Bardet's process, with the plain seed and strong alcohol, and the other amber-yellow by M. Catillon's method, with the seed previously exhausted by ether to remove the fatty constituents. M. Catillon, a pharmacist, who is a member of the same society, took occasion to give a good exposition of the pharmacology of strophanthus, with an insight into its chemistry. To begin with, he thought all tinctures should be discarded, as, owing to the absence of generally accepted formulas, the preparation is made of very variable strength, and even when the same proportion is adhered to the appearance of the tincture affords no criterion of its actual value. The alcoholic extract is much preferable, and, even if further investigations confirm Dr. Bucquoy's opinion,—namely, that strophanthin possesses exactly the same virtues,—the active principle should be substituted in most cases. Specimens of strophanthus-seeds, experimented with, were found to contain in every one hundred parts, thirty-two parts of fatty substances soluble in alcohol and ether, fifteen of dry alcoholic extract, and eleven of gummy and albuminous matters. The fat is of an intense green color, which is imparted to the tincture when the preparation is made from the plain seeds and strong alcohol. As the substance is inert and has a sickening odor, it should be rejected from both the tincture and the extract,—a result easily obtained by first exhausting the seed with ether and then macerating them in alcohol of 70°. Thus prepared the tincture is light yellow, very active, and may be used for preparing the extract by simple evaporation. So powerful is the extract that, like veratrine, it cannot be handled without fits of sneezing. It is soluble in water, but, as the solution is milky, a mixture of glycerin and water, which affords a clear liquor, should be preferred for hypodermic injections. But the extract itself is liable to vary considerably in composition, for M. Catillon stated that while one kilogramme of ordinary strophanthus-seed usually affords him 9.50 grammes of crystallized strophanthin, or very nearly one per cent., he obtained from a specimen which Dr. Polaillon had for fifteen years kept in the pod the enormous proportion of five per cent. The active principle, besides, differed both in crystalline appearance and chemical reactions from the customary strophanthin. Hence the conclusion that if extracts of strophanthus-seeds are of variable strength, the tinctures must be still more so; and it is even most likely that the drug contains more than one active principle, or that the principle, known to be a glucoside, is readily altered by chemicals or simply by age alone. M. B. Reber, a pharmacist of Geneva, Switzerland, has besides observed that when the powdered seeds are

made into a paste with cold water, and set aside for several days, the preparations obtained therefrom are considerably more active and toxic, although the effects are nearly the same as those of the ordinary drug. So much confusion existing respecting strophanthus preparations, the beginning doses may be set down as follows:

Tincture (Fraser's), 1 to 20, 5 to 10 drops.
Tincture (Fraser's), 1 to 8, 2 to 4 drops.
Tincture (Fr. Ph.), 1 to 5, 1 to 2 drops.
Alcoholic extract, 1 to 2 milligrammes.
Strophanthin, $\frac{1}{10}$ to $\frac{2}{10}$ of a milligramme.

Larger doses, such as 15 drops of the French tincture, as prescribed by Dr. Dujardin-Beaumetz, are somewhat risky, although the doctor says he never met with any accident except occasionally a slight diarrhœa. As regards the therapeutic effects, he finds that strophanthin has not the same action as the tincture of the seeds, the tincture possessing a powerful diuretic virtue not to be found in the glucoside.

Notwithstanding the uncertainty and obscurity surrounding strophanthus, it will probably retain a conspicuous place in materia medica. French practitioners seem to consider it inferior to digitalis as a diuretic, but much preferable in some varieties of heart-diseases, and at least equal in most cases. Before closing the subject it may be well to notice a remark made by Dr. Polaillon. Having observed that animals are very differently affected by strophanthus,—that a dog, for instance, will be killed with a dose much smaller, comparatively, than would be necessary for a toad, a snail, or a mammifer like a mouse,—he is of the opinion that men are likely to be variously acted upon by the poison according to their race and idiosyncrasy. Although the deduction may not be generally accepted, the facts are not without interest to the therapeutist.

The discovery of a new poisonous alkaloid has been announced by M. Domingos Freire, of Rio Janeiro, to the Academy of Sciences. It is found in the fruit of a Brazilian plant popularly known as "Fructo de lobo" (wolfspear), because it occasions the speedy death of all the sheep that eat it. *Solanum grandiflora* var. *pulverulentum* is the name of the plant. The fruit has the shape of a very large pear, green in color, and very bitter in taste. From it M. Freire has extracted a bitter principle, presenting the general properties of alkaloids, but insufficient in quantity for a complete investigation. As the name solanin already serves to designate an alkaloid, he proposes for the new principle that of *grandiflorine*. So far but little seems to be known about the plant, excepting that it is much used for various maladies in the localities where it naturally grows; but there is no telling what it may turn out to be in the future. Perhaps it will be a rival of strychnine or strophanthin, or only cundurango, maybe.

A delicate affair, involving the question of "professional secrecy," was last week related by Professor Brouardel. He received, not long since, a letter from a brother physician asking his advice in an embarrassing case. "I am," said in substance the correspondent, "physician to a railroad company, and as such learned from an employé of the company that he was suffering from vertigo. The complaint had caused him to fall down several times, once ten years ago, and again quite recently. The man has, besides certain other duties, to attend to a switch. What must I do in this case? I have ascertained indirectly that a good employé with such an ailment is reasonably sure to obtain from the company some office employment with an equivalent salary. But professional secrecy forbids my speaking." Dr. Brouardel answered that, in his opinion, human lives being at stake, the physician ought not to run the risk of failing to prevent an accident. He should try to persuade the patient to confess the truth, and then do his best to get for him other employment from the company. Should the patient remain obdurate, Dr. Brouardel thought the physician then quite justified in considering the travellers' safety and his duty to the company superior to other considerations; he should state the case to the road managers. A week or two later Dr. Brouardel was informed by the same correspondent that the affair had been happily settled by the patient's confession and his subsequent appointment to another position with the same salary, but involving no danger to the travelling public. There was an end, therefore, to this particular instance, but a question of principle still remains in doubt. To decide it Professor Brouardel laid the case before the Paris Society of Legal Medicine, an organization numbering eminent lawyers among its members, and a committee was named to examine the question in the abstract and report. The case is not without interest, for if French medical jurisprudence differs from the American, the sense of medical duty is the same all the world over.

PARIS, December 23, 1887.

A CASE OF STRANGULATED HERNIA TREATED WITH COCAINE.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Permit me to submit the following short history of a case of strangulated hernia to the readers of the GAZETTE:

I was summoned the other day to a farm about twelve miles from my residence, where I found I. H., a farm hand, 35 years of age, suffering from strangulated hernia. Patient had inguinal hernia for the last twelve years, but never wore a truss.

While pitching hay that morning, he felt, all at once, a pain in the inguinal region, and had hardly strength enough to walk to the house, about two hundred feet from the place where he was working.

I arrived six hours after the accident happened, and found a tumor of the size of a man's fist in the left inguinal region, very tender, and with all the evident symptoms of strangulation.

Having but a small quantity of ether with me, I decided to give him first a full dose of a hypodermic injection of morphine, then administer the ether, and thus make a trial to reduce the hernia.

However, in opening my hypodermic case, I found a solution of cocaine, and it struck me at once to try this "universal" remedy.

I injected therefore around the tumor, deeply, at four places a small quantity of a four per cent. solution of cocaine, and having a small spray-atomizer with me, I filled it with pure ether, then after waiting for about six minutes, in order to give the cocaine a good start for action, began to spray the swelled parts, watching them all the time, occasionally trying if the strong resistance did not subside. After a while I found the tumor to diminish in size. I stopped spraying and proceeded to the reduction, using gentle taxis, and in a short time found my work crowned with success. During the whole of the manipulation the man evinced but slight symptoms of pain. Yours,

DR. ALEXANDER RIXA.

ST. CLOUD, MINN.

COCAINE IN VOMITING OF PREGNANCY.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I see on page 765, November number, 1887, of your journal an extract from the *Lancet* (London, I suppose), October 15, 1887, concerning the use of cocaine in the vomiting of pregnancy, by Dr. Duncan. I do not think that Dr. Duncan has the precedence as being the first to use this method of treating this vomiting. Professor Geo. J. Engelmann was using it early last spring (in April) to my personal knowledge. He applied it to the cervix with absorbent cotton, and it was followed by relief; and, to make it more permanent, he then followed with an application of ten per cent. solution of carbolic acid. I have only employed this method in one case, and it was permanent. By referring to pages 370, 371, and 372, June, 1887, number of the *Archives of Gynæcology and Obstetrics*, you will find an article from Professor Engelmann, taken from the *Can. Med. Rec.*, wherein he gives his experience in the treatment of this very troublesome affection with cocaine, carbolic acid, and other drugs and methods of treatment, electricity, etc.

I am yours very truly,

CHEVES BEVILL.

WINFIELD, ARK., December 1, 1887.

Notes and Queries.

MICRO-ORGANISMS AND THEIR ACTION ON MILK.

Milk is not only a model food, but is also an excellent medium for the development of many distinct varieties of minute organisms. Seeing the large extent to which it enters into the dietary of human beings, the nature, action, and import of the changes thus set up merit and have received the most careful and patient attention at the hands not only of medical men, but of chemists and persons interested in agricultural matters. There are two well-recognized varieties of fermentation, caused (1) by chemical ferments, or enzymes, and (2) by organized ferments. The former are unorganized compounds, soluble in water, and very little is known with regard to their chemical constitution. They are rendered inactive by heat exceeding 170° F., and their action is best exemplified in the conversion of starch into sugar by diastase, of nitrogenous substances into peptones by pepsin, and the coagulation of milk by rennet.

All students of physiology are familiar with these instances of the action of this class of bodies, but they are less so with the phenomena of "true" fermentation, due to the presence and development of *organized* ferments. These are not soluble in water, though they may not be perceivable under ordinary circumstances. They consist of cells, to which, on account of their microscopical size, the

name of "micro-organisms" has been applied, and are the active agents in the decomposition of sugar into alcohol and carbonic acid, the transformation of the acetic acid, and the splitting up of milk-sugar. They proliferate by means of spores, which possess powers of resistance to cold, heat, dryness, etc., far in excess of that belonging to the fully-developed organism. The development of those spores into adult organisms is accompanied by certain changes in the medium in which they exist, and these changes constitute fermentation. Elementary as these details may appear, they are of comparatively recent discovery, and are largely due to the school of which the illustrious M. Pasteur was the founder.

It is unnecessary to review the precise steps by which the rôle of each particular organism has been assigned to it, nor to recapitulate the evidence on which the fact of the direct connection of these organisms as a cause, and not as a consequence, with the fermentative processes has been demonstrated. The procedure, which is the concrete result of many years of indefatigable study, is familiar to every student of bacteriology, and is rapidly paving the way to conclusions as brilliant as they are novel. The whole subject has been very carefully reviewed by Dr. P. Veith in the current number of the *Journal* of the Royal Agricultural Society (*Medical Press*, November 23, 1887).

Milk may undergo either the lactic, the butyric, the slimy, or the alcoholic fermentation, the last, however, only under artificial conditions. There is also an organism which gives a bluish tint to the milk as well as several less well understood varieties.

Besides the organisms which give rise to fermentation, milk serves as an excellent medium for the proliferation of many other beings of microscopical dimensions, which are capable of and apt to convey disease, although they do not bring about any alteration in the appearance in reaction of milk. These do not probably come within the scope of our remarks, but they have assumed considerable importance in the light of recent investigations, and the possibility of communicating disease through the milk-supply has now been amply and conclusively demonstrated. There are three ways in which milk can contract infection, so that it becomes a source of danger to the consumer: 1. Through the air. The gases emanating from privies and sewers are most likely to carry dangerous germs, and, by coming in contact with milk, to infect it. 2. Through water; this is frequently highly contaminated when proper precautions are not taken that no intercommunication exists between wells and sewers, cesspools, and the like. The fraudulent addition of such water is not necessary, as simply washing the vessels used for the conveyance of the milk will suffice to contaminate the whole supply to an alarming extent. 3. There is the possibility of the milk-supply being derived from cows suffering from certain diseases, a subject still requiring investigation.

The best method of keeping milk pure and free from germs is to place it under such conditions as to prevent, as far as possible, the access of air and other sources of contamination. This, except as a laboratory experiment, can obviously be only partially carried out, but the development and multiplication of fermentation or disease germs can be hindered by at once reducing the temperature of the milk. If necessary, the milk can be subsequently sterilized by raising to a temperature of 165° F. once daily for five days. This has to be done, because the spores can resist a temperature even of 212°, and they have to be killed as they develop into adult organisms. If the air be then excluded or filtered, milk may be preserved sweet almost indefinitely. Rigorous cleanliness of the utensils, milkers, and udders, however, is a much more reliable means of securing purity from germs, and, if properly carried out, ought to render other measures, save refrigeration, unnecessary. The utensils can only be properly cleansed by means of boiling water or steam, and on most well-ordered dairy farms this is now insisted upon. The use of chemical agents to prevent the development of micro-organisms is unsatisfactory and undesirable. It is, moreover, contrary to law.

Milk should always be boiled before being consumed. If this be done, all fully-developed organisms will be destroyed and the spores alone remain; the risk of disease being thereby considerably lessened.

CANNON-BALLS IN CHRONIC CONSTIPATION.

The treatment of chronic constipation by abdominal massage, which has been systematically practised for many years with the best results by Professor V. S. Manasseïn, of St. Petersburg, has of late begun to find favor with many practitioners all over the world. Among others, Mr. Frederick Treves, of

London, about two years ago, expressed approval of kneading the abdominal walls, a procedure which had been shortly before recommended by Dr. Krivïakin, of Dagestan (see the *London Medical Record*, August, 1885, p. 334; and April, 1886, p. 153). Dr. Hermann Sahli, of Berne, has lately introduced (*Correspondenz Blatt für Schweizer Aerzte*, No. 19, 1887, p. 581) a somewhat startling modification of ordinary massage, which deserves to be more widely known. Massage by professional rubbers is expensive, besides being frequently objectionable in other ways. Dr. Sahli thinks that he has hit upon a plan which will make massage for chronic constipation cheap and easily available. The method, which its inventor warrants as effectual, consists in the patient rolling with his own hands a cannon-ball, or other round metallic mass, weighing from three to five pounds, up and down over his uncovered abdomen every day for five or ten minutes. The patient lies on his back during the performance, which should always take place at the same hour. The best time is the morning, before rising. Besides rolling the ball about, the patient should from time to time raise it to a certain height, and bring it down on his belly with some force. The whole abdominal surface must be conscientiously rolled every time. The ball may be warmed or wrapped in a woollen cover before use. In some patients this novel form of artillery practice takes effect almost immediately; in most, the bowels are opened a couple of hours after the application. In the bulk of cases the constipated habit disappears in a few weeks, but relapse very frequently occurs when the daily rolling of the abdomen is discontinued. Dr. Sahli believes that his new therapeutic agent will, in spite of its formidable sound, become popular to the extent of generally replacing the lighter ammunition which (in the form of pills, etc.) has hitherto been used against the disease.—*Brit. Med. Journ.*, November 26, 1887.

A CASE OF ANTIPYRIN-POISONING.

Dr. J. S. Whitehouse, of Santiago de Cuba, writes to the *New York Medical Record* of December 3, 1887, as follows: "A few days ago I gave a dose of 7½ grains of antipyrin in about 1 drachm of syrup to a young girl, with the following bad results: About two minutes after taking it severe gastric pains came on, which augmented to such a pitch as to become unbearable. She arose in great distress, bending forward and crying out with pain, and threw herself on the floor, writhing like a serpent. These symptoms were of three or four minutes' duration, when an intense eruption of urticaria came over the whole surface of the body, adding greatly to her sufferings from the intense itching, which caused her to tear her flesh with her nails. Having only warm water at hand, a large quantity was given to produce vomiting, which was aided by titillating the fauces with the finger. The symptoms became so severe that she became unconscious, and I feared death from heart-failure. Immediately $\frac{1}{60}$ grain of atropine was injected, which, in a few minutes, caused all the symptoms to disappear, and she has had no return of them."

CIRCULATORY CHANGES IN THE KIDNEYS UNDER THE INFLUENCE OF CARDIAC AND OTHER REMEDIES.

The exact action of drugs which increase the flow of urine from the kidneys is a question which as yet has not been conclusively answered, but one which is, nevertheless, of vast importance, and deserves careful study and research. Only lately Dr. G. Smirnow has been carrying on a series of most careful and interesting experiments in the chemical laboratory of Prof. S. P. Botkin, in St. Petersburg. The results of his experiments regarding the action of cardiac remedies on the kidneys have led him to the following conclusions:

1. Injections of infusion of digitalis, adonis vernalis, and convallaria majalis in moderate doses increase the pressure of blood in the kidneys and decrease its volume. This contraction of the kidneys continues as long as the pressure remains high. As the latter decreases (or a little before) the kidney will gradually increase in size, and finally becomes much larger (two to four cubic centimetres) than it originally (normally) was. The whole process takes from three-quarters of an hour to an hour, until the kidney has again assumed its normal, or nearly normal, size, which, of course, depends upon the blood-pressure.

2. The second experiment, as also the first, was performed upon animals under the influence of morphine. The same drugs were given, and it was seen that at the moment of the contraction of the kidneys the secretion of urine stopped entirely, and did not recommence until the kidneys had again begun to

increase in volume. The increase of secretion was always in proportion to the enlargement of the kidneys.

3. If the nerves of the kidneys be severed, naturally with the exception of those which are in the walls of the vessels, a contraction of the kidney will take place just as quickly, by means of the same remedies, as when the nerves are left untouched. The subsequent increase in volume is, however, much slower, and finally but slightly exceeds its original size.

4. In further experiments, in all of which the urine was carefully collected, it was seen that under the influence of digitalis there was always a cessation of the secretion at the moment of the contraction of the kidneys, both when the nerves were left intact, and when they were severed. The increase of secretion always took place first in the kidney the nerves of which had not been cut, and also ceased sooner than in the kidney the nerves of which had been severed.

5. Neutral salts (natron nitricum and natron aceticum) cause similar changes in the circulation of blood in the kidneys; they exert, however, a different effect upon the pressure of blood. When first acting (when given in large doses), the pressure sinks slightly, whereby the volume of the kidney is also somewhat decreased; then with the rise of pressure the volume of the kidney increases in exact proportion.

6. These symptoms are not changed by severing the nerves.

7. If the pressure of blood is reduced by any reason about twenty to thirty millimetres, then the injection of the above-named salts has no effect on the circulation of blood in the kidneys.—*Medicinisch-Chirurg. Rundschau*, November 15, 1887.

FÆCAL ANÆMIA.

Sir Andrew Clark has done good service the other evening in calling attention to the importance of constipation as a factor in the production of anæmia or chlorosis in young women. Whether or not his theory of the mechanism of their causation by absorption of the products of the decomposition of retained fæces be correct, clinical experience indicates plainly enough that a very close relationship exists between the two. Not only with regard to fæcal accumulation, but in respect of retained excretions anywhere, the same observation holds good. This fact accounts for the good effects which attend purgation in so many disordered conditions more or less dependent on the non-elimination of excrementitious products. When the effects of decomposition compounds are superadded to those of non-elimination, it is not surprising if a morbid condition of things be engendered. It was incidentally remarked that fæcal accumulation may take place without constipation. In other words, there may be a daily but imperfect action of the bowels. Although this is a trite observation, it is but too frequently lost sight of in the treatment of these conditions. The rôle of ferruginous preparations in restoring the blood to its normal condition is an important one, but it is quite subsidiary to the necessity for effecting a thorough clearance of the overloaded colon. For this purpose our forefathers resorted to a combination of iron and aloes, which fulfils every indication and has the merit of being less nauseous to take, if given in the form of pills, than the horrible blend of Epsom salts and perchloride of iron which figures in every hospital pharmacopœia.—*Medical Press*, November 23, 1887.

METHYLAL.

This body, with the formula ($C_3H_8O_2$), discovered by Malaguti in 1839, is derived from methylic alcohol. It has an ethereal odor, and is very volatile. It is soluble in water, alcohol, oil, etc. In doses varying from 25 to 50 centigrammes per kilogramme of body-weight it produces a calm sleep, followed by but little malaise. When the dose is increased to 2 grammes per kilogramme of body-weight death is produced, with symptoms of collapse. All species of animals are amenable to its influence, but the higher the rank of the animal in the scale, the greater are its effects. For instance, it takes twice the dose to produce the same effect on a dog as on a monkey. It is rapidly eliminated, principally by the lungs; there is, therefore, no cumulative action. It has been tried in the treatment of dementia, but the dose requires to be augmented after a day or two. It is quite useless in alcoholic delirium. Respiration becomes deeper, and the flow of saliva is increased. It is a valuable drug in cases of poisoning by strychnine. On man 5 grammes are required to produce any marked hypnotic effect. Injected hypodermically, it causes acute pain; inhaled, it gives rise to irritation of the bronchial and

nasal mucous membranes, with lachrymation, sneezing, and cough. It is, therefore, preferably administered by the mouth in a suitable vehicle.—*Lond. Med. Rec.*, November 15, 1887.

CHILDREN'S WINTER DRESS.

There is a tolerably general impression in many quarters that in order to promote the health of children it is advisable to subject them to a "hardening" process. The meaning of this term it is needless to explain further than to say that it is to encourage native energy by opposition, to engender strength of mind and body by early participation in the struggle for existence. The principle is in itself a wholesome one, and is not without its parallel in the history of nature's processes. Care is most necessary, however, in its application. Without such care it may be, and frequently has been, overdone. In particular must it be remembered that all success in the adoption of this plan in education depends on the possession by a child thus trained of a basis of sturdy physical vigor. A delicate child, if treated after the same method, would languish and probably succumb. We have been led into this train of observation by noting the frequency with which one finds children of both sexes and of different ages, constitutions, and positions in life treated after one uniform prescription of hardy training. We would now concern ourselves particularly with that aspect of the question which has to do with clothing during such inclement weather as prevails at present. That considerable variation of opinion should obtain among parents with regard to this subject is only to be expected. Here, it may be said with truth, is room for the wise exercise of private judgment, and here we may in many cases find occasion to apply the maxims of the hardening system. So much may safely be granted, but we must not forget that certain essentials cannot be dispensed with under any plan adopted. Among these the maintenance of bodily heat and dryness is all-important, and certain of the most prevalent customs of domestic life incline us to believe that the fact is but slightly understood. The hat, for example, is often, in the case of girls, far too light and too cool. Instead of straw, we would substitute some form of woollen material, just as boys, with few exceptions, are commonly provided with hats of wool or felt, which are at once light, comfortable, and suitably protective against weather. Under-clothing is another matter which does not as yet receive adequate attention. We still find the linen shirt or chemise worn very commonly next the skin. This is an error in personal hygiene which cannot under any system be excused. Summer and winter, indeed, present no material difference as regards the choice of an under-garment. Lighter or heavier, the material certainly should vary in accordance with the degree of external cold; but throughout the year no other substance is so wholesome or so preventive of chill as a woollen fabric. Of the feet we need, perhaps, hardly speak. For them, as for the rest of the body, a casing of wool is the prime requisite; and, indeed, the use of this material as a general investment for the skin will be allowed by members of the profession generally to be the great regulating principle in arranging the dress of children, whatever the view most approved in their physical education.—*Lancet*, December 3, 1887.

VEGETABLE GLOBULIN.

Dr. S. H. C. Martin says that vegetable globulins may be divided into two classes,—vegetable myosins and paraglobulins. Myosin prepared from wheat-flour, rice, or barley has similar properties. All are easily soluble in a ten to fifteen per cent. solution of chloride of sodium, and may be re-obtained from the solution by saturating it with sulphate of magnesium or hydrochlorate of soda. They are also soluble in a ten per cent. solution of sulphate of magnesia, and coagulate in this solution at a temperature of 55° or 60° C.

If the salt be dialyzed from the salty solution of myosin, the latter will be precipitated. The sediment will, however, no longer be globulin, as this is insoluble in salty solutions. It is soluble in weak solutions of acids and alkalies (0.2 per cent.), and can be precipitated from these solutions by neutralization; the residue is soluble in an excess of acids or alkalies; that is to say, the myosin is converted into a proteid which has the properties of an albuminate.

If a salty solution of myosin be placed in an incubator at a temperature of 35° to 40° C., in twelve to eighteen hours a fine, flaky precipitate will be observed, while the globulin will have entirely disappeared from the solution; this takes place with still greater rapidity if the salty solution is weak.

This residue will have the same properties as the residue of globulin obtained by dialy-

zation; that is to say, that at a temperature of 35° or 40° C. the globulin will be changed into an albuminate.

The easy conversion of the soluble globulin of wheat-flour into an insoluble albuminate is one of the occurrences which take place during the preparation of gluten.

The second class of vegetable globulins, which are the paraglobulins, are quite different in action and have markedly different properties to the myosins. Two proteids of this class were found, one in the juice of the papaw fruit and the other in the seeds of *Abrus precatorius*.

These two globulins show the following properties: they are soluble in solutions of salt, and are precipitated by saturation with chloride of sodium or sulphate of magnesium. They coagulate in a ten per cent. solution of sulphate of magnesium at a temperature of 70° to 75° C. They can be precipitated from their salty solution by dialyzation; they are, however, still soluble in ten to fifteen per cent. solutions of chloride of sodium or sulphate of magnesium, whereby it does not change into an albuminate; however, if the solution be kept at a temperature of 35° to 40° for over three days the globulin will again be precipitated.—*Proc. Phys. Soc. Jour. Chem. Soc.* and *Pharmaceutischer Post*, September 4, 1887.

ANONA MURICATA.

Anona muricata L. belongs to the family of Anonaceæ, and is a medium-sized tree, indigenous to America and largely cultivated in the South. The leaves are used as an anthelmintic. The watery decoction of the root is given as an antidote in certain cases of poisoning resulting from eating fish.

A cooling drink, which is said to be of value in dysentery, is prepared from the fruit. The fruit is very large, weighing usually from two to three pounds each, and is greatly relished as an article of food in the tropics.—HENRY LAFITE, of Vienna, in the *Pharm. Zeitschrift für Russland.*

ASTERACANTHA LONGIFOLIA.

Asteracantha longifolia, or *Hygrophala spinosa*, is a narrow-leafed plant belonging to the Acanthaceæ, and is indigenous to India and Ceylon. It is highly recommended by DR. A. JAYESINGBA, physician in charge of the Civil Hospital in Kurunnagala in Ceylon, on account of its energetic diuretic properties, and especially its beneficial action in "hydrops." The plant is called "*Ikkiri*" by the Singhalese, and is considered to be one of the best diuretics; on this account it has been given a place in the Indian Pharmacopœia by Dr. Waring.

The natives use it for rheumatism and local inflammations in the form of a poultice.

Dr. Jayesingba, when using the infusion in 2-ounce doses, observed a marked increase of urine, the quantity secreted being two or three times greater than normal.

These properties justify the recommendation of the drug in the dropsy caused by malaria.—*Pharm. Zeitschr. für Russland*, September, 1887.

ARSENIC IN CHLOROFORM.

SCHOLVIEN has detected traces of arsenic in many samples of chloroform. This may be accounted for by the presence of arsenic in the sulphuric acid or manganese used in the preparation of the chloride of lime with which the chloroform has been made. He suggests that in order to examine a suspected sample for arsenic the chloroform should be stirred with absolutely pure dilute potash, be then evaporated, and the residue tested by Marsh's process. When arsenical chloroform is distilled, Scholvien is positive that all the metal remains behind, none passing over with the distillate.—*Lancet*, December 3, 1887.

THE IMPERIAL DENTIST OF SPAIN.

By a special decree of the Minister Sagasta, DON RAPHAËL ALCADE Y BURIL has been appointed dentist to his Majesty the King of Spain. His duty consists in a weekly examination of the king's teeth, and the cleansing and filling of them when necessary. For this he receives a salary of two thousand francs (about five hundred dollars). As his Majesty is only a very few months old, Dr. Raphaël will probably not be required to fill many royal teeth at present.—*La France Méd.*, No. 90, 1887.

ACCORDING to the latest statistics, the number of physicians in France is eleven thousand nine hundred and ninety-seven.

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